

# SUPPLEMENT.

## The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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561.—Vol. LIV.

LONDON, SATURDAY, SEPTEMBER 20, 1884.

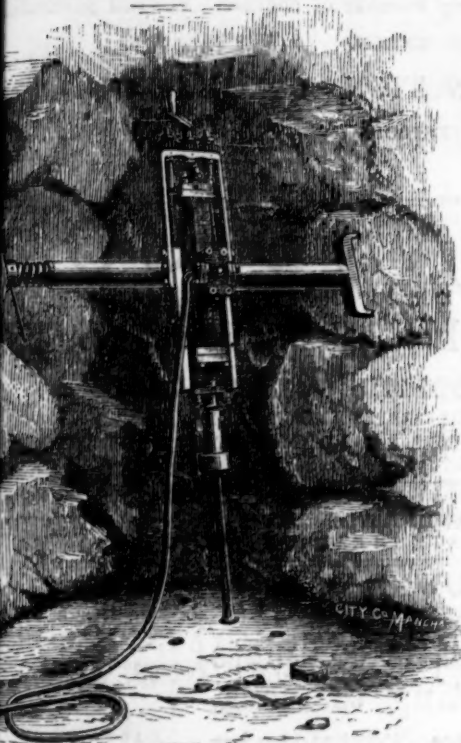
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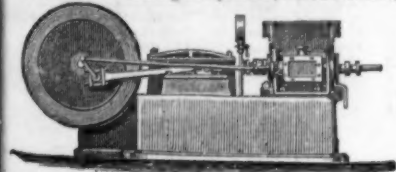
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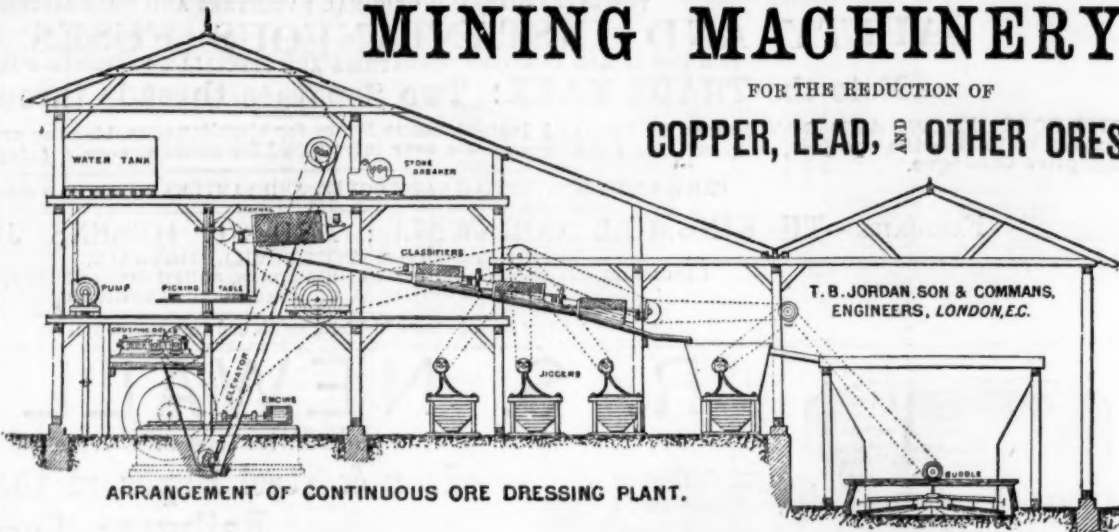
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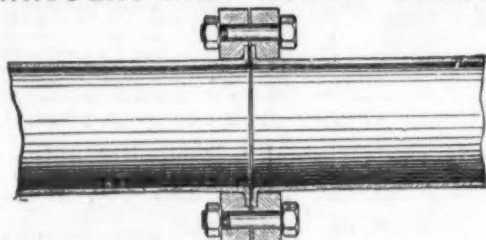
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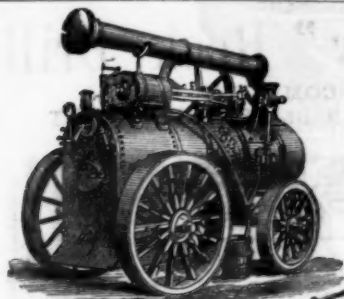
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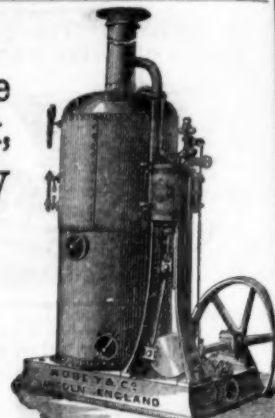
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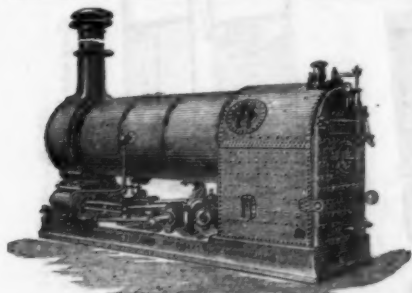
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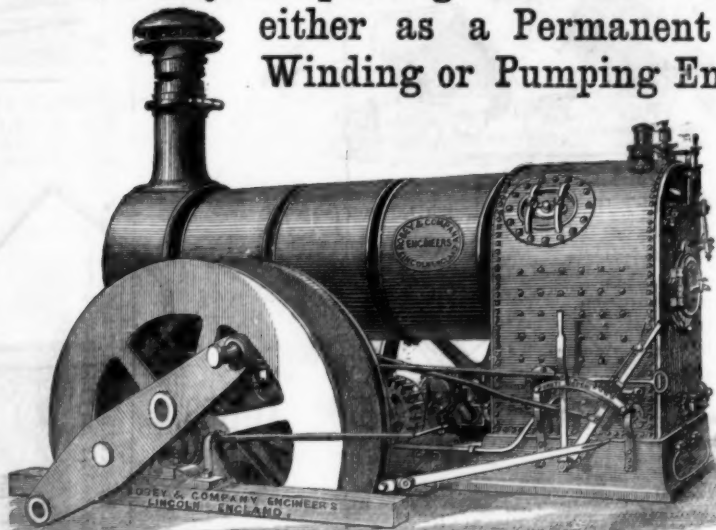
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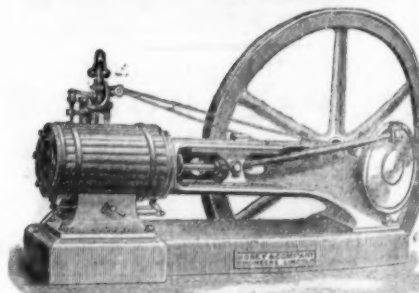
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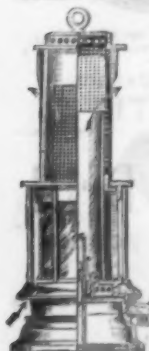
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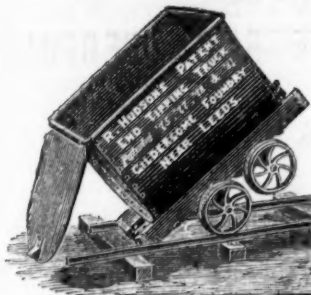
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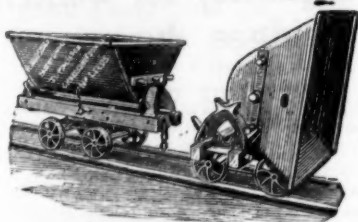
1.—PATENT STEEL END  
TIP WAGONS.



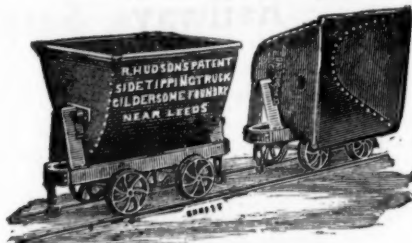
7.—PATENT STEEL MINING WAGONS.



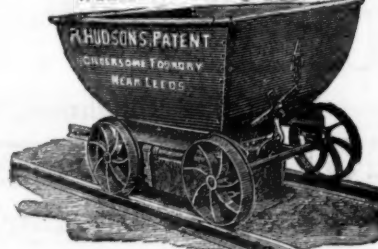
2.—PATENT UNIVERSAL TRIPLE-CENTRE  
STEEL TIPPING TRUCK,  
Will tip either side or either end of rails.



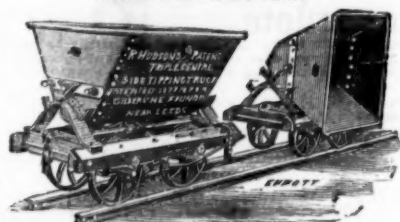
8.—PATENT DOUBLE-CENTRE STEEL  
SIDE TIP WAGONS,  
Will tip either side of Wagons.



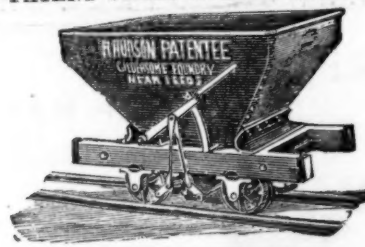
12.—PATENT STEEL HOPPER WAGON,  
WITH BOTTOM DOORS.



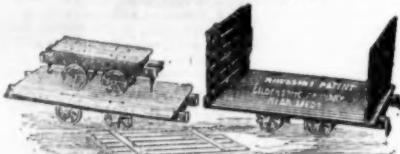
3.—PATENT TRIPLE-CENTRE STEEL  
SIDE TIP WAGONS.



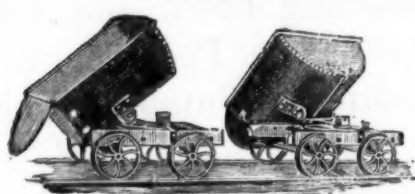
13.—PATENT STEEL HOPPER WAGON.



4.—PATENT STEEL PLATFORM OR  
SUGAR CANE WAGON.



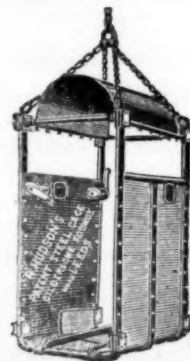
9.—PATENT STEEL ALL-ROUND TIP  
WAGON.



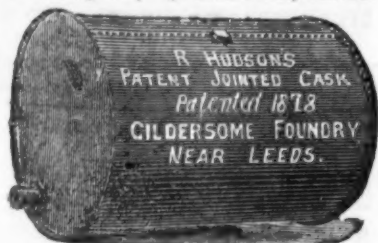
14.—SELF-RIGHTING STEEL  
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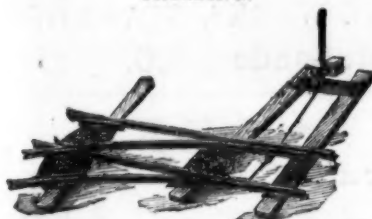
15.—STEEL CAGE.



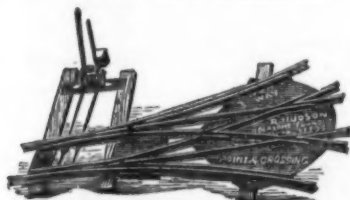
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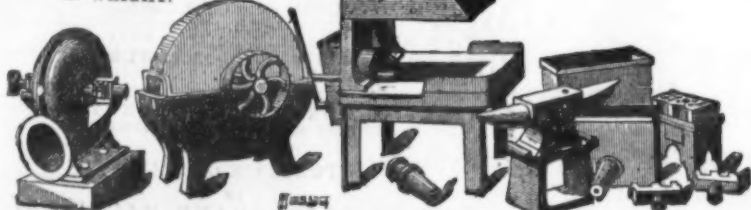


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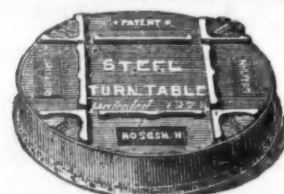
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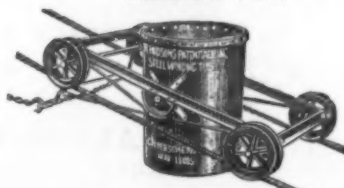
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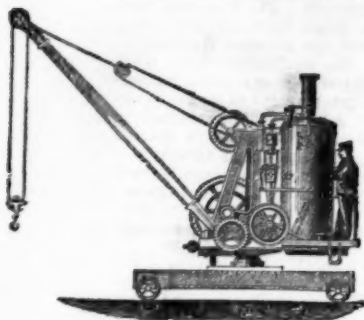
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## Original Correspondence.

## MINING IN NEW SOUTH WALES.

SIR.—A rough general idea of mines here and there, from north to west, scattered throughout several hundreds of miles of country is given in to-day's Sydney Morning Herald, from which I subjoin extracts. Advices from Carcoar states that a new copper lode has been discovered by Williams and party about a mile from Burrage. The lode at present is 4 ft. wide. The prospectors are down a depth of 100 ft. The dip seems to improve. It is the intention to send to Sydney some specimens for assay. The Burrage Copper Mine continues to look well. There are now five smelting furnaces in full operation, and preparations are being made for the erection of more. Mount McDonald the proprietors of the Perseverance claim have just finished crushing 18 tons for a yield of 25 ozs. 19 dwts. of gold. At Parkes, W. Hazelhurst cleaned up on the afternoon of Aug. 31 after crushing 127 tons, which gave the magnificent return of 557 ozs. of gold, or nearly 4½ ozs. to the ton. This claim is on the old Buchanan line of reef. Qualle and party, owners of the adjoining claim, are now crushing a parcel of stone which is considered to be very rich.

At the first auction sales of the mining leases on the Church and School Estate, which was held at Copeland, on Aug. 29, 51 acres were purchased for the Prince Charlie Amalgamated Gold Mining Company, which purchase includes four valuable leases on the Homeward Bound Reef, and covers all the ground which will be prospected by the company's proposed tunnel. The North Hidden Treasure Company are raising splendid stone from their new reef, which is 2 ft. thick. No. 2 East Mountain Maid Company are raising stone which is expected to yield fully 5 ozs. to the ton. Several of the townsmen of Glen Innes are interested in the rich find of silver at Emmaville. The prospects of the new find are exceedingly good. Emerson and party, of Coolac, sent 18 tons of stone on Aug. 31 to Adelong, to be crushed, which is expected to yield 4 ozs. of gold to the ton. This claim has just been purchased by a Melbourne company.

The mining manager of the Wesley Tin Mining Company reports on July 29 as follows:—"Webb and Company came on the top floor wash on Friday, and since that time have raised two loads of wash dirt that will wash 60 lb. to the load. During the week this party should be in the bottom floor, and after this we should be in position to speak definitely as to their prospects. At present everything points to their developing a payable lead. O'Rourke and Company are being hampered through their ground dipping very fast southerly, and thus damming back the water. At present they have to use a Californian pump below, and if it keeps dipping they will have to stop and come back to their shaft, and cut the bottom. The face looks quite as good as at any time, but the progress is extremely slow, on account of having so many drawbacks. Ryan and Co. continue to raise payable wash, and I am hopeful that their energy will lead to something extra good ere their term expires. Lawry and Company are raising better dirt than for some time past, and I think will make something like wages this month. Riley and Company are not getting on well; the ground is very poor and difficult to work. Archibald and party on the shallow lead are on very poor ground, but this lead is so patchy that the results can only be judged from month to month. Richardson and Company continue to raise payable dirt." A correspondent, writing under date July 25, says that mining is looking up about Cadia. The No. 1 Canoblas Mining Company has everything complete at its mine, and expects to start crushing in a few days. By the look of things it has a good future before it, as there is a lode which yielded 6 dwts. per ton for 112 tons just tried at Cadia battery. With the gold saving appliances that the company has it expects to get a much better return. About 400 tons are at grass.

The return of copper received at Darling Harbour station for the week ended July 26 was:—From Nyngan, 88 tons 1 cwt. 1 qr.; Carathool, 1 ton; Orange, 2 tons 10 cwt.; total, 91 tons 11 cwt. 1 qr. The return of tin ore received at Newcastle and Morpeth for the week ended July 26 was:—From Uralla to Newcastle, 20 tons 8 cwt. 2 qrs.; from Uralla to Morpeth, 27 tons 8 cwt.; total, 47 tons 16 cwt. 2 qrs. A company is being formed here to work a patent by Mr. Herrenschmidt, which professes to extract cobalt from manganese and other ores so easily and cheaply as to produce it at half its present cost, and if it proves a fact practically (commercially) all the poorer ores from New Caledonia will be utilised by it. There are very large deposits of both cobalt, nickel, and manganese ores near Noumea, but the European company that is now working them must believe them to be also veined with gold, ready to be coined into specie, if one may judge by the ultra costliness of the "management" (?), and the number of "managers."—*Sydney, Aug. 2.* R. D. A.

P.S.—In the Journal of June 7 you misprint in my letter the name Dr. Robert Fraser; it should be Dr. Robertson, F.R.G.S.

## WEST COAST (GOLD COAST) OF AFRICA.

SIR.—The letter of "E. W." in last week's *Mining Journal* puts a query which calls for immediate discussion—that payable gold quartz reefs do exist on the West Coast of Africa is beyond dispute, and so also is the fact that many thousands of pounds have been expended upon a hitherto vain attempt to put the gold contained in those reefs into the pockets of those shareholders who have ventured their hard cash in these West African companies. Granted, then, that gold does exist; the reason why it has not been brought home can only be one of three—1, want of capital; 2, unhealthiness of the country; 3, incompetency on the part of the extractors. With respect to the first reason it is well known that money has not been wanting—so we may dispose of this at once. The second reason is more formidable, but nevertheless it is well known that many people have lived for years on the West Coast exposed to all dangers of malaria, bad food, and exposure who are as well and strong to-day as if they had spent their lives in Devonshire. Sobriety and a strong constitution given there is no reason why Europeans should not carry out mining operations on the Gold Coast as well as in any other tropical climate. We now come to the third reason—incompetence. Companies have been floated on reports of *ex-débutant* naval officers, indiarubber buyers, and illustrious travellers, who, however eminent in their respective walks of life, were not fit and proper persons to report upon gold mines. Then, again, we have managers whose gold mining experience was obtained in purchasing palm oil, while others who had seen a gold mine before visiting West Africa had shortly to be dismissed either by the company or the doctor for excesses. What would a Californian or Australian manager think of a man who expected to extract gold by means of bare copper plates without any quicksilver. I think, therefore, we may take it for granted that it is poorness of knowledge rather than poverty of gold which has up to this time prevented West African mines taking their proper place as dividend-paying properties. PLANTER.

## KAPANGA GOLD MINING COMPANY OF NEW ZEALAND.

SIR.—Whilst agreeing with the remarks of your correspondent in last week's *Journal*, I must confess it is somewhat refreshing to receive a report in which there is indicated capital in hand necessary for the present working. Shareholders have been so accustomed to urgent applications for fresh capital that I am sure they will be glad to know that they are not at present required to advance more money. So far as the working cost is concerned—£2147. 11s.—the greater part of this would be under Captain Thomas' management, and I hardly think we can criticise Captain Argall under this head. It is noticeable that the directors in their report say "Capt. Thomas, they are informed, has now left the colony."

So far as the London expenses are concerned, I quite agree with your correspondent. The receipts at the mine show 1636l. 10s. 5d., the office expenses 849l. 15s., or more than one-half. I may point out that if we had a secretary whose whole time was devoted to the company, and a separate London office, the expenses ought not to have been so much, and when we consider 1l. shares have been issued at 2s. 6d. by the company to keep the company going, I think we

should expect a reasonable charge for London expenses, in addition to which 250l. appears to have been spent on commission account. It seems to me that at present the company is entirely in the hands of the new manager, and the manner in which he carries out his duties during the next few months will, I think, determine success or failure.—*Bristol, Sept. 16.* WILLIAM W. BAKER.

## MINING PROGRESS IN BRAZIL.

SIR.—Since my last writing nothing extraordinary has occurred in our mining field. The new company—the Ouro Preto Gold Mines of Brazil—are fairly at their work, and so far they pursue the same system of care and economy as was practised by the former owners of the mines. Extensive preparations are going on for new mills and reduction works. At Passagem the Rio Carmo is to be brought to the mills while work is pushed in developing the mines. There is an abundance of ore in sight. Experiments are to be made with the Frankfort mills, the same that are in use at the Pestarena Mines, where the pyritic ore of the Passagem Mines has been experimentally worked, with fine results. This pyritic ore is very rich, but it has been treated for the free gold only. Large additional profits may reasonably be expected from the improved methods which are being adopted.

At Raposos a large reservoir is in course of construction, which is intended to store abundant water for the present number of stamps during the dry season. A large mill being built below the mouth of the deep adit, and efficient works for retreatment are to be added. The second adit has just cut one of the large shoots of the richer ore called "Mina Grande," and in it are found the arsenical pyrites similar to those which gave strength and wealth to the Morro Velho lode. Raposos has now extensive reserves of ore, apparently not of very high grade, above the adits, but good enough to give a very large profit over the cost of mining and milling, as through the adits it can be taken out and milled at small cost. Below the adit No. 2 the canal shoot is rich, and this will be cut by the deep adit. Tests made of the pyrites prove that a large recovery of gold will be made by the retreatment works now going on. At the Borges Mine exploitation is continued by sinking main shaft, and opening the deep adit. Not any of the main shoots of ore are being worked, but they will soon be intersected by the drifts and adits. As this mine is a little out of the way some "jumpers" have tried a black mail operation in California or Nevada style. A Mr. Chaves (an employee of the St. John del Rey Company) wrote to the manager of the Raposos and Borges Mines that a Brazilian claimed some ground, and in a mining point of view he considered it worth 2000l., and unless some terms could be arranged he had the honour to inform the manager that the claim would be advertised in the *Mining Journal* and other European and French commercial journals. The reply given was that there was no wish to interfere with the extensive advertising engagements proposed, and that no negotiations would be entered into, as all the property was marked off by the proper authorities, and was paid for, and that his threats were not of the slightest importance. On the departure of the old manager the same parties made a fresh attempt to try for a penny, and to scare the new manager. I have been shown a copy of an advertisement which this jumper sent to Rio for insertion in the *Jornal do Commercio* and the *Rio News*. The affair is scarcely worth notice, but my attention has just been called to it by Mr. Wendeborn, the manager of the mines. The company need not feel alarmed at such work; it is simply laughed at here. There is no legal claim whatever, the blackmailers will not resort to law, as that would cost them a trifle. The manager tells me that at the valuation put on their claim, 2000l., the entire property would be valued at something like 280,000l.

The manager has shown me an abstract of title, certified by the best counsel in mines, and endorsed by the judges of the several districts where the Minas are located, all stating that the title is perfect, and the conveyances are according to law. Moreover, the syndicate who worked these mines previous to the formation of the present company had peaceable possession some three years; and only now a feeble attempt is made to scare a little money out of them. No notice should be paid to the blackmailers, as others would surely be encouraged to try the same game. It is, as I said before, a customary move whenever a company take hold. The Ouro Preto Company are fortunate in having a manager who fully understands the customs and the law of the country, and in whose hands no interests of the company will be neglected. The company are to be commended for their course when, in taking over the properties, they allowed the work to move quietly on without parade, or the usual violent changes which very often result in ruin to the prospects of a new concern; and they are to be congratulated in finding a good, steady, efficient staff of officers and men at each mine, all of them acquainted with the language and ways of the natives, as well as being experienced in the mines of Brazil. The visit of two of the directors of the company, who came with a mining engineer of well-known position—one who had, two years previous, spent 10 months' time at the mines—will satisfy the company that everything, as stated by the syndicate, is fully confirmed by a very exhaustive examination and the work of the mills. Morro Velho is turning out more gold, and Cuiaba holds its own. All desire the success of Cuiaba. There can be no competition in gold mining. R. Ouro Preto, Aug. 12.

## TANKERVILLE, AND THE POOR MINERS.

SIR.—In a well-intentioned, no doubt, but highly sensational letter with regard to the stopping of the Tankerville Mines Mr. John Leach, of the Manse, Ministerley, has made some remarks, which, as a shareholder, I cannot allow to pass unnoticed. That very (in his own interest) kind-hearted gentleman in the course of his letter, which is chiefly remarkable for its length if looked at from a literary point of view, says:—"Why have the mines closed? It is understood that the low price of lead is the reason. Perhaps so, but is it not a little significant that these mines have had a series of stoppages during the last 40 years. It would not be a little interesting if some person or persons with a knowledge of facts could give us a fair and full statement of the cause or causes of such stoppages. Has it always been owing to the failing of the markets, or the failing of the companies, or failing in business-like management? If a commercialist comes to grief time after time a whisper soon is heard of a screw being loose, and an investigation is made. It might be to the interest of miners in future if it were ascertained where this ever-occurring leakage lies that brings on bankruptcy. . . . Thanks to the gentlemanly behaviour of Mr. T. M. How 25 per cent. of the wages had been given, but what is it? Just enough to irritate and perplex them. Nearly seven weeks' money is still left owing to them. Moreover, it may not be generally known that this marvellous effort of the company to lessen their liabilities is of a very restricted character. . . . Sir, either by argument or strong cries of shame the company should be made to feel that the discharging of over 300 persons without due or proper notice and payment of hard-earned claims is contrary to reason, justice, and morality. It is of little use for the men to use threatening language; at the same time the company have made an appeal to their lower nature, and almost driven them to desperation. Whip a lion and he will growl. A sheep, docile as it is, will bleat loudly if you skin it alive. . . . The company ought to pay, and if through your paper, which has hitherto done good service to the miners, one or two solicitors could be induced to give their services for the benefit of the men, a great boon would be conferred upon them. We are told the capital is run out. Why did it not run on April 4 instead of May 2? Surely there was as much capital on the last day as the former. What became of the ore that left Pennerley during April? It is said an unusual quantity was prepared and hauled away. The 25 per cent. they have received I understand is the produce of lead sent to the markets since the mines closed. Surely the men ought to derive some benefit from lead obtained antecedent to that? Ought not the men to have a word with the liquidators? A commercialist on failing in business calls together his creditors, but the Great Consols Company have not done so. . . . Suppose the capital is gone, and, as stated, the plant is mortgaged to the tune of 4000l., is not the plant from a working standpoint worth over 30,000l.? Further, has there been no dividend paid since the company was floated. If there has, why should not the shareholders be now prepared to share some present loss after

past gain? Again, there are between 700 and 800 shareholders, the total number of shares being over 130,000. A levy of something under 3d. per share would pay the poor men their wages, another 1d. per share would compensate the men for their long waiting, and another 1d. compensate them for being discharged without notice. It would be a proper thing to do, in my opinion, to levy about 5d. a share, and save the company from what seems a disgrace. It is loud small talk about the plant being mortgaged. We know pretty well the mortgagee is safe enough. The value of his money is there. Let the men be put in as good a position. If the mines had prospered, and lead had fetched 16l. instead of 6l. per ton, what a fine time shareholders would have had enjoying their dividends. Now they should be prepared for the other thing."

Now, giving Mr. Leach all credit for good intentions towards the poor miners, and still more towards the ratepayers of the district, I think there is one little thing he has forgotten—to point out the great inducements which past results afford to the shareholders who are to pay the leeching levy of 5d. per share. I have bought and sold, on the recommendation of dealers who are supposed to understand those matters, shares in Tankerville, Bog, and Pennerley Mines, and my books show that every share has cost me more than the par price. This is perhaps a reflection on my judgment, but it is true; I do not complain. I merely "write myself an ass," and I will suppose that I got in at par to simplify the calculation of profit and loss. I find that as between the mines and the shareholders (of course I do not include promoters, reconstructors, and officials, as I do not regard promotion and directors and managers' fees as quite equal to dividends when I look at the thing from a shareholder's point of view) the shareholders have not quite got the best of it. In round numbers it appears that on an average 10 years ago the shareholders' investments were—

In Bog—about 25,000 shares, at 2l. ....	£ 50,000
Pennerley, 12,000 shares, at 2l. ....	24,000
Tankerville (first concern) ....	60,000
ditto (present concern) ....	110,000

Deduct. ....	£244,000
Dividends paid to shareholders on 12,000 shares, Tankerville first concern, at 4l. 17s. per share ....	58,200

Balance ..... £185,800

This statement ought to convince Mr. Leach that the shareholders he reviles have been very benevolent already. It is true they have received nearly 60,000l. as dividends, but this is all they have had as interest for 10 years on 244,000l., which is rather less than 2½ per cent. per annum simple interest. I, therefore, for one claim to be ranked as one of the sheep who have been skinned alive, and if I do not bleat so loudly as Mr. Leach it is because I know that I took a speculative risk, and that it is useless to cry over spilt milk. My personal profit in the concerns does not amount to 1½ per cent. on my investment, but I do not complain—my average of mining speculations pays me. Here is a series of mines extravagantly managed, thugged by promoters and reconstructors, or rather by those who do the financing for the said promoters and reconstructors, and still it has given 2½ per cent. per annum all the way through, with lead at a ruinously low price, and capital for mining concerns very difficult and costly to get. Had lead been at anything like an average price the average profit would have been not 2½ per cent. per annum but 20 times that rate; and if a new company were now to buy up the assets at their present worth—about 5000l. or 6000l.—take over the liabilities, and provide the necessary working capital—another 19,000l. or 20,000l. would be enough for everything—the new concern could I am sure pay 20 per cent. per annum on the 25,000l., which would be readily subscribed. MINER, Hanwood, Sept. 16.

## HULL, BARNESLEY, AND WEST RIDING JUNCTION RAILWAY AND DOCK COMPANY.

SIR.—Resuming my contribution to last week's *Mining Journal*, the truly lamentable state of this undertaking precludes further criticism of the proceedings of Aug. 30. It would afford me pleasure if the following stanza could be rendered applicable to the pioneers of raising Hull to a leading coal port—"Qu'en esprit ferme, et sur en ses desseins a sur l'esprit obscur des vulgaires humains," in lieu of a perfect collapse of public faith. Truly no great effort of skill need be requisitioned to effect a disentanglement, it being sheer wasteful expenditure of time and treasure improvising purely financial expedients. Prove to the public that 4,000,000 tons of coal can be carried over the line for shipment in the dock annually to London, and delivered into consumers' cellars in the Metropolis at 10s. a ton, effecting a saving of 50 per cent. the house coal in London, and steam coal in Paris, exclusively used in their closed stoves, at 30s. per ton with equal saving, which all can be rigorously verified, supported by the very highest practical credentials, any amount of capital will be forthcoming. There is one point I cannot pass unnoticed—allusion to the transfer of the undertaking to another railway company, *vide pp. 23 and 24* of the official report of the proceedings of preited meeting, rendered more impressive by the speech of the Mayor of Hull, p. 30. Adieu to the shipment of a single ounce of coal in Hull for London otherwise than hitherto, practically nil, if the company swerve from their organised purpose—an independent line for coal shipment from Hull for London, &c. Any shipment elsewhere, as compared with such to the Thames is of no importance. There are comparatively few who have the inclination or the ability to wade through a mass of statistics, separating, and comprising the chief items, and to the great bulk of people, therefore, such analysis and explanation of the figures is essential if their true significance is to be realised. Allow me, then, in graphic, intelligible form to state that the shipment of 4,000,000 tons coal annually in Hull for London is entirely dependent upon dispatch in emptying the wagons and stowing the sacks, which can be strictly carried out. Mr. Thomas E. Harrison, the engineer-in-chief of the North Eastern Railway, stated in his evidence in the Hull and Barnesley, &c., Bill, "The whole secret of being able to do a large traffic depends on the getting the trucks rapidly emptied and off the main line." To talk of shipping 4,000,000 tons coal a year by the system contemplated by the railway company's evidence is an utter impossibility, and equally so of competing with railborne coal in the metropolitan market, taking their own figures in evidence, thus—

Railway carriage, &c., officially stated ..... Per ton	s. d.
Wagon hire .....	0 6
Trimming .....	0 2
Freight .....	3 6
City dues .....	1 1
Lighterage .....	1 0
Landing .....	0 11½
Cartage .....	2 6
Breakage or loss by small, as per evidence of the two leading London coal merchants .....	2 0
	14 3

Coal at pits on basis of proposed company, higher price for best silkstone .....	7 9
	22 0

Of course, if less than 7s. 9d. at pitmouth per ton be calculated the reduction applies to each case, which coincides in the main with an editorial article of a contemporary on "The Coal Traffic by Railway to London," on July 11 last. The general manager of the Great Northern with his proverbial astuteness stated in his evidence that the Hull and Barnesley Company with their maximum annual shipment of 1,000,000 tons coal could not realise more than 1 per cent. upon their capital as proposed, 3,000,000l. What fraction do they expect to attain upon double that capital? An immense benefit will accrue to Hull by a great reduction in cost of coal, which can only be attained by assimilating the Hull and Barnesley line to the Taff Vale coal line, the largest dividend-paying railway in the United Kingdom. Coal is the great factor, dispensing with costly stations, important traffic managers, &c. Hull's best interest is to tread in the



footpaths of coal carrying lines, the Taff Vale and the ex-Tyne and Blyth. The South Yorkshire coal traffic will monopolise the entire line, Barnsley to Hull, and give employment to the vast working population of Hull by land as well as by sea.  
Little Turner-street, Sept. 16. W. J. THOMPSON.

#### COMPANIES LAW—CURIOUS SUGGESTIONS.

SIR.—Can you give me any information as to the duties of the Registrar of Joint-Stock Companies? Considering the high fees that are paid on all the operations of a company that are supposed to be recorded at his office, surely there must be some *quid pro quo*, and that, it may be inferred, is in favour of protecting the shareholders.

How is it, then, that so many companies treat the provisions of the Acts with contempt without being called to task by the Registrar? Such as—Not holding in due course the statutory four months' meeting; not sending in a list of members made up to the fourteenth day after such meeting; not sending in an annual balance-sheet, and so on.

Surely after a company is once registered it would be little trouble for the Registrar to keep a diary and send out notices to the defaulting companies, pointing out the penalties for non-compliance with the statutes, which are now in many cases treated as a dead letter; by these reminders directors and other officials would feel that there was some little responsibility attached to their offices. If the Registrar did what I suppose to be his duty—keep the records of his office in a proper manner, there would be fewer cases of companies being allowed to drift into oblivion to the loss of the shareholders. If in cases where shareholders had any reason to suppose any of the conditions named had not been complied with, probably a line to the Registrar asking if the document in question had been duly filed would result in a reminder from him to the company. H. A. V.  
Newcastle, Sept. 17.

[If "H. A. V." be really the secretary of a company he ought to have an annotated copy of the Acts of Parliament affecting companies—Anthony Pulbrook's Companies Acts, published by Eppingham Wilson, for example—and he will find the duties of the Registrar distinctly stated. If the Act be not complied with the officials of the offending company are liable for the neglect. Any shareholder can move in the matter. There is no doubt that the Registrar of Joint-Stock Companies performs his duties as well as they would be performed were he replaced by "H. A. V.," who might be at some disadvantage until he had seen, at least, the outside covers of the Acts of Parliament or of some reprint of them. We do not know whether a private note from the Registrar to each offending company would lessen the number of infractions of the law; but the value of the principle might be tested, without adding to the Registrar's already heavy duties if "H. A. V." could induce the judges, who now cause so much inconvenience to criminals in general, to send a short private note to each supposed burglar and pickpocket politely explaining to him that his compliance with certain Acts of Parliament, quoting chapter and section, of course, would avoid infraction of the law, and be of considerable advantage to the whole community.]

AUSTRALIAN COPPER PRODUCTION.—In 1853 the quantity of copper raised in New South Wales was 58 tons, valued at 578*l*. In the following year the quantity sank to 30 tons. Since then, with the exception of two or three years, there has been a steady annual increase, until in 1883 the quantity reached 8957 tons 7 cwt., valued at 577,201*l*. The total quantity raised during the period 1853-83 was 61,051 tons 17½ cwt., valued at 4,115,486*l*.

NEW BANKRUPTCY ACT.—*Re E. J. BARTLETT.*—Another instance of the admirable working of Mr. Chamberlain's Act is afforded by the rapid and satisfactory progress made in dealing with the affairs of this bankrupt. It is a London case, and, therefore, dealt with in the High Court of Justice, and stands as No. 653 of 1884, yet we have already received from the Assistant Receiver the official summary of the debtor's statement and the Receiver's comments upon it. The abstract shows:—Gross liabilities, 11,030*l*. 18s. 2d., made up of creditors secured and unsecured 10,950*l*. 4s. 10d., and preferential creditors for rent, tax, and wages 71*l*. 13s. 4d. The liabilities expected to rank are:—Unsecured creditors, 8869*l*. 15s. 2d.; creditors partly secured (= 2089*l*. 9s. 8d., less estimated value of securities 1450*l*.), 639*l*. 9s. 8d. = 9509*l*. 4s. 10d. As assets there are:—Property as stated and estimated by debtor—cash, 10*l*. 15s. 6d.; office furniture, 10*l*.; book debts stated as good, 44*l*. 19s. 3d.; book debts doubtful and bad (= 14,945*l*.), estimated to produce 270*l*.; various shares estimated to produce 9*l*. 10s.; other property ditto 125*l*. = 470*l*. 4s. 8d., from which must be deducted preferential debts for rent, tax, and wages as *per contra* 71*l*. 3s. 4d., leaving total available assets 398*l*. 11s. 4d., and thus showing a deficiency of 9110*l*. 13s. 6d. The Official Receiver in his observations says:—"The debtor, who describes himself as a stock and share dealer, attributes his failure and deficiency to heavy losses by bad debts and depreciation in value of securities and property, arising chiefly from speculative investments in mining companies which have failed. He has kept books which appear to sufficiently disclose his business transactions, and from which his financial position could be ascertained. The unsecured debts include liabilities amounting to about 5398*l*. for calls on shares and guarantees and acceptances in respect of various companies. The securities held by creditors are stated to be debenture bonds of the Great Holway Lead Company (800*l*.), of the Pennant Barytes and Lead Company (1700*l*.), and of the Alltani Colliery Company (150*l*.), the value of which is estimated at 950*l*. and also stated to be dependent on the market price of the metals; machinery at the Gorse and Merilyn Mines, estimated at 450*l*.; and a life policy for 500*l*. estimated at 50*l*. The doubtful and bad book debts (14,945*l*. 19s. 2d.) appear to consist chiefly of balances due from various mining companies which are stated to be in course of liquidation. The debtor holds a large number of shares in mining companies, which (with the exception of 9*l*. 10s. appearing above) are stated to be of no present value. He states that in April last he effected a private arrangement with the majority of his creditors, under which they agreed to accept a composition of 5s. in 1*l*. payable by equal instalments in June and December, 1884. The first instalment is stated to have been provided for and paid out of the proceeds of the sale (in May last) of his late residence (St. Helen's, Cazenove-road, Stoke Newington) and the household furniture. The furniture at his present residence (50, Alkham-road, Stoke Newington) is stated to be the separate property of his wife. The debtor has incorrectly entered the value of the office furniture as 10*l*. in the statement, it should have been stated as 60*l*.; the amount of 10*l*. being the estimated surplus after deducting the claim for rent which is included in the preferential debts." The contrast is striking between the payment, in such a case as this, within three or four months of what is equivalent to a first dividend of 2s. 6d. in 1*l*. with the prospect of a second and final dividend of 2s. 6d. in 1*l*. in December, and the tedious, iniquitous, and expensive process which was possible, and, indeed, usual, under the old Bankruptcy Act; and the mere publication of the Receiver's observations is calculated to satisfy creditors that the best possible has been done for them. To those who would under the old system have been entrusted with realising and distributing the assets an estate with 15,000*l*. worth debts of any kind (the more doubtful the better) would have afforded occupation and been utilised for drawing fees until far more than the 5s. in 1*l*. which now falls to the creditors, had been absorbed. Considering the history, position, and prospects, however, of the "various mining companies" indebted to the bankrupt it would be exceedingly difficult to find a speculator sufficiently reckless to buy up the 14,945*l*. 19s. 2d. at 1d. in 1*l*. The mines have seldom in any given year returned sufficient profit to pay the salaries of officials and have usually resulted in lamentable loss to all connected with them. Mr. Bartlett may be congratulated upon having relieved himself of so much worthless rubbish by so simple a process as bankruptcy, and upon having arranged to pay so satisfactory a composition as 5s. in 1*l*. to his creditors. At the first meeting of creditors, on Tuesday, resolutions were passed providing for the payment of a composition of 2s. in 1*l*. in two instalments, at three and six months from the date of the public examination, which is fixed for Oct. 15.

#### FOREIGN MINING AND METALLURGY.

The Belgian Coal Trade has continued to exhibit a relatively favourable tone, although the aspect of affairs is not regarded as completely satisfactory. The imports of coal into Belgium in the first seven months of this year were 674,060 tons, as compared with 681,645 tons in the corresponding period of 1883. In these totals English coal figured for 142,009 tons and 161,697 tons respectively. The imports of coke into Belgium in the first seven months of this year were 24,688 tons and 21,500 tons respectively. The exports of coal from Belgium in the first seven months of this year were 2,534,461 tons, as compared with 2,282,391 tons in the corresponding period of 1883. In these totals the exports to France figured for 2,383,726 tons and 2,121,922 tons respectively. The exports of coke from Belgium in the first seven months of this year were 500,264 tons, as compared with 610,607 tons in the corresponding period of 1883. In these totals the exports to France figured for 455,118 tons and 535,735 tons respectively. The German Coal Trade has experienced scarcely any change during the last few days. There has been active movement of coal of late over the railways accommodating the basin of the Ruhr. In the first eight months of this year 360,240 tons of Westphalian coal were received at Hamburg. The quantity of English coal imported at Hamburg in the same period was 639,557 tons.

The Belgian Iron Trade has presented scarcely any new feature. It may be noted, however, that the International Association of Steel Manufacturers, at a meeting just held at Bonn, has decided on maintaining the combination until the close of June, 1886. The present scale prices are also to be maintained until further notice. English casting pig has made 2*l*. 2s. 6d. per ton upon the Belgian markets. Hard refining pig has been quoted at 2*l*. per ton; ordinary ditto at 1*l*. 16s. per ton; and mixed ditto at 1*l*. 12s. per ton. No. 1 iron for exportation has continued to be priced at 4*l*. 10s. per ton; ditto for home consumption at 4*l*. 12s. per ton. No. 2 has made 4*l*. 16s. per ton; and No. 3, 5*l*. 2s. per ton. Girders have been quoted at 4*l*. 16s. to 5*l*. per ton. No. 2 plates have brought 6*l*. 4s. per ton; No. 3 ditto, 7*l*. per ton; and No. 4 ditto, 10*l*. 4s. per ton. There are now 23 steelworks, having among them 80 converters, in the German Empire. Austria and Hungary have 12 steelworks with 34 converters; Belgium, three steelworks with 18 converters; France, seven steelworks with 34 converters; England, 23 steelworks with 115 converters; and Russia, five steelworks with 10 converters. The imports of iron minerals into Belgium in the first seven months of this year were 913,237 tons, as compared with 908,341 tons in the corresponding period of 1883. The exports of iron minerals from Belgium in the first seven months of this year were 108,111 tons, as compared with 249,680 tons in the corresponding period of 1883. The exports of rails from Belgium in the first seven months of this year were 31,476 tons, as compared with 37,777 tons in the corresponding period of 1883.

Notwithstanding all the efforts of producers, prices of various descriptions of iron continue deplorably low in France. Iron has scarcely sold at Paris above 6*l*. 4s. per ton, and the intelligence received from the departments is by no means brilliant. Official returns have just appeared in illustration of the make of pig in each of the French producing districts in the first half of this year, as compared with the corresponding period of 1883. In the Meurthe-et-Moselle the production was 385,303 tons, against 390,595 tons; in the Nord, 113,209 tons, against 125,483 tons; in the Loire, 14,380 tons, against 27,619 tons; in the Rhône, 35,515 tons, against 30,347 tons; and in the Saône-et-Loire, 64,297 tons, against 76,056 tons. The production of iron and steel has also fallen off this year in the Nord, the Loire, and the Saône-et-Loire. The production of steel rails in France in the first half of this year was 176,202 tons, as compared with 192,156 tons in the corresponding period of 1883. The French steelworks continue to compete with the Anglo-Germanic Belgian Syndicate for any rail contracts which may happen to present themselves in various parts of Europe. The enterprise of the French steelworks also carries their managers across the Mediterranean, the Terrenore Works having obtained an order for 8000 tons of rails from the East Algerian Railway Company at 5*l*. 19s. per ton, delivered at an Algerian port. The profit realised at such a price must be very trifling. The German iron trade has shown scarcely any change.

#### UNIVERSITY MINING SCHOLARSHIP.

It is difficult to say whether the greater prominence should be given to the generosity of the donor, or to the practical importance of the Mining Scholarship just established in the South Wales University College. At the meeting of the Council of the College, on Monday, a formal vote of thanks was given to Mr. W. Thomas Lewis for his very handsome offer of a scholarship of 33*l*. per annum, open to colliers who have worked underground for six years in the Rhymney, Merthyr, Aberdare, or Rhondda valleys. There has been correspondence on this matter between Mr. Lewis, Lord Aberdare, and the Council. In his letter to Lord Aberdare, making the original offer, Mr. LEWIS said:—"Referring to our discussion as to mining scholarships when I had the honour of meeting you at the Athenaeum Club a few weeks ago, I shall be glad, in order to give a start in the direction of establishing a chair of engineering and scholarships in connection therewith, to contribute 33*l*. per annum for six years towards a mining scholarship, the scholarship to be tenable for three years, and open only to colliers of good character who have worked underground not less than six years at collieries in the Rhymney, Merthyr, Aberdare, or Rhondda valleys. As I believe you are aware the attempts to establish provincial schools of mines have been anything but successful, but as I consider it very important for the future development of minerals in this district that special inducements should be offered to workmen's sons upon leaving school to enter collieries and make themselves thoroughly acquainted with the practical getting of coal I venture to make this offer to assist in what will at all events be for some time but an experiment as regards its usefulness for colliery engineering, and in the hope that some of the mineral proprietors and large colliery owners of the district will come forward and establish scholarships for the same object, and thus, if well received by the young colliers, ensure a good stock of practical colliery managers for the future working of our mineral field. Of course, it will be necessary to consider some details as to arrangements for proposed candidates attending night schools and lectures at the college to qualify themselves for competing for the scholarship, and I assume that if such a scheme meets with the approval of your Council, arrangements will be made so that the person holding the scholarship shall have his education free of college fees. Perhaps I ought to add that it may be worth considering whether two years at the university, and the third in connection with practical engineering at a colliery, would not be better than spending the whole three years at the university."

The matter was referred to a committee, who drew up a series of questions, and answers to those questions were received from a number of experts. Ultimately the senate prepared a scheme, which was submitted to the Council and approved, the details of the scheme being thus arranged:—1. That mining students to be eligible for the scholarship shall have worked underground at least six years. 2. That the subjects of the entrance examination shall be mathematics, physics, chemistry, geology, English, or Welsh.—3. That the course of study shall be (first year), mathematics, physics, chemistry (chemical laboratory), English (short essays), optional French or German. Second year—Mathematics, physics (physical laboratory), chemistry (chemical laboratory), engineering, optional French or German. Third year—Mathematics, engineering (and laboratory), engineering (drawing). It is hoped that the first examination will take place about Christmas.

HOLLOWAY'S PILLS—THE CHIEF WONDER OF MODERN TIMES.—This incomparable medicine increases the appetite, strengthens the stomach, cleanses the liver, corrects biliousness, prevents flatulency, purifies the system, invigorates the nerves, and reinstates sound health. The enormous demand for these pills throughout the globe astonishes everybody, and a single trial convinces the most sceptical that no medicine equals Holloway's pills in its ability to remove all complaints incidental to the human race. They are a blessing to the afflicted, and a boon to all that labour under internal or external disease. The purification of the blood, removal of all restraint from the secretory organs, and gentle excretion are the prolific sources of the extensive curative range of Holloway's pills.

#### REPORT FROM CORNWALL.

Sept. 18.—Though the hopes which were with some confidence entertained of a speedy—indeed, imminent—advance in tin prices, delusive, and though our prospects afford no very clear and definite outlook, we see no reason whatever for doubting that substantial improvement is not far off. The general tone of affairs really appears healthy, and there are fresh signs of improvement in several directions in the mines themselves. Between now and the end of the year considerable changes for the better may be looked for in various concerns, and it is quite upon the cards, therefore, that 1884 may make a more favourable ending than either of its recent predecessors.

The Wheal Jane business has naturally excited, and is exciting, much attention. It is really one of those questions in which, if it were in any way possible, united action should be taken. No mine sets should be taken up which allowed such a condition of affairs to exist; and if mining were wholly in responsible hands that is the way in which this sort of difficulty could be met. Unfortunately there are always "speculators" who will "run" any mine for the moment, and who will always be found ready to step in where the legitimate miner holds aloof, ready to accept all the conditions that may be imposed, because they have no intention of meeting the Nor as a too general rule do the lords of mines care one iota whether they have to deal, if only their interests are strictly preserved. We see the same thing, in fact, in mining as we do (but to a much larger extent) in farming—rents forced up to a point which cannot be maintained with honesty, because the landlord is perfectly sure of his money under the law of distraint, whatever may become of tradesmen and merchants. Of course, it is easier to point out the blot than to apply a remedy; but it is perfectly certain, for all that, that if done were paid on profits only we should have far less of the reckless speculative element. Lords would see that their interests lay in taking only honest and capable tenants, and such could only be kept by being treated on fair terms.

The perusal of the interesting article by Mr. Quick "On Cornish China-Clay" reminds us in its reference to Cookworthy of the justice that has been done to the memory of that chemist and manufacturer by ill-informed and partial writers. Neither of the well-meaning authorities cited by Mr. Quick—Mr. Prideaux and Mr. Harrison—were really adequately acquainted with his practical work; and what has been written of Champion's labours and the Bristol Pottery, Cookworthy's just claims to credit have been to a large extent ignored. Nearly all the doubtful points in Cookworthy's career were, however, settled some half dozen years ago by the latest writer upon Cookworthy and his china factory, Mr. A. Worth. In that paper Mr. Worth showed, on Cookworthy's own authority, that so far from his having a pottery in Plymouth in 1733, when he was but 28 years of age, he had not commenced one a manufacture there more than 30 years after that date. It was also shown that while neither the china-clay nor china-stone had been found in 1745, Cookworthy had discovered both before 1730. Again, we have his own statement that he first found the petunse not at St. Stephen's but at Tregonning Hill, where also kaolin was first found.

Another point brought out by Mr. Worth was that Cookworthy, after making numerous experiments at Plymouth, obtained as his sight into the details of the potter's art, probably at Worcester, certainly at Bristol, and that having succeeded in making true porcelain at Plymouth, he had a manufactory at Bristol, which was given up by February, 1766, before the Plymouth manufactory was started. Moreover, when the Plymouth works were transferred to Bristol, Cookworthy was still concerned in them up to May, 1774, very little having been done at Plymouth apparently after 1772; while it is perfectly clear, as Mr. Quick says, that Champion's claims to merit have been too slightly regarded, it is equally true that the work done by Cookworthy has been too slightly treated by the friends of Champion. Some of the latter, indeed, have even gone so far as to say that the want of success at Plymouth was not commercial only, but manufacturing, whereas Cookworthy really brought his china to a high degree of perfection. The fuel he used was chiefly wood, and he employed 50 to 60 persons in the various processes. The blue and white Plymouth china was shipped in very large quantities to America. The kiln used was the ordinary potters' 38-hole kiln. Cookworthy was such a benefactor to the counties of Cornwall and Devon that even these few additions and corrections touching the information current concerning him, which, as Mr. Quick says, is very meagre, will be of interest.

#### REPORT FROM DERBYSHIRE AND YORKSHIRE.

Sept. 18.—Trade generally has become more settled, and the mineral traffic by railway has again got into its old groove. The consequence is that ironstone for the supply of the furnaces has come more freely to hand from the Northamptonshire districts than it did, for it is necessary to keep stock in hand. But the make of pig is not now so large as it was a month or two since, but there is a sufficiency produced to meet all requirements, and, perhaps, something over. The largest quantity is now taken for the leading foundries, which have done very fairly for some time past, more especially in pipes and heavy work. In lighter work business has been somewhat moderate. Machinists and engineers have had a rather quiet time of it, whilst railway wagon builders have had as much as they could do to keep their hands fully going. Malleable iron castings, which were first produced in Derbyshire at the Dronfield Works, are now being turned out in new and varied designs. Small machines and a variety of useful and ornamental articles, have been cast with such finish as to be equal in appearance to steel. Now there are cast flower-stands, in handsome ornamental designs, vases, equally chaste, and similar articles that cannot fail one would think to be most successful in these days, when so much attention is paid to tile and terra-cotta material, which is so perishable and easily broken.

The collieries have worked better during the week so far, and an increased tonnage of house coal has gone from several of the leading Derbyshire mines to the Metropolis, without prices going up; but no advance may be expected to take place before long, seeing that the active season will shortly commence. The colliery owners during the last four or five months, in particular, have had anything but a good time of it, and those may be considered to have done well who have been able to carry on without any loss. The men have helped them in no way, for when asked they have refused to submit to any reduction of prices, although they have had no association to fall back upon. The men at Mr. Mundy's Shipley Pits have struck against a proposed reduction of wages about two months ago, and stood out until a few days since, when they resumed work at the terms first offered. They preferred to hold out as long as they could receive a few shillings weekly from the men in work, and as soon as that began to fall off they gave way. The Shipley Collieries find work for a large number of men, and a considerable business is done from them with the Metropolis. Most of the coal sent to the latter from Derbyshire is for household purposes, although it would be well were more of the harder kinds to find customers. For this description of fuel it is not easy to find markets at a moderate distance from the collieries, whilst there are no ports where it can be shipped within a reasonable distance. Fortunately the blast-furnaces take a good deal, and the railway companies are good customers, and on these two sources a great deal of dependence has to be placed. Gas coal is now going off better than for some months past, but this of course in no way affects prices, seeing that what is sent away is under contract. Coal for manufacturing purposes is still in what distance by railway from the leading cotton manufacturing districts of Lancashire, but this will be remedied in the course of a short time by a new railway, for the construction of which parliamentary powers have been obtained.

The general trade of Sheffield and the district has undergone very little change of late, so that several branches are still tolerably quiet. The production of pig is comparatively trifling, considering the consumption, so that a good deal has still to be imported from the North-west. Bessemer steel is being fairly turned out, more being done in rails, whilst a good deal is taken by manufacturers of cutlery and tools, as they can purchase special qualities suited for



their requirements considerably less than they can the crucible steel formerly used by them. In crucible steel no change has taken place, the make being below the productive power. There are, however, some heavy castings of it for shafting screws for steamers and similar material; a fair tonnage is also taken by manufacturers of special wheels, tools, and blades of a large kind for machinery.

The cutlery houses are still rather quiet, and transactions with America have not improved, although a change for the better has been looked forward to for some weeks. Sheep-shears makers continue to be fairly employed, and there is a considerable turn out by Crowley and Co. of some special machines, such as turnip and chaff cutters, bean and other mills. Ordinary plates are only in moderate demand at the Atlas and Cyclops Works. There is considerable activity as regards the composite armour-plates, for which Sheffield appears to have obtained the monopoly of the world, for neither Krupp nor any of the American firms have been able to turn out plates with the same amount—or anything like it—of resisting power as those produced at the works alluded to.

#### REPORT FROM LANCASHIRE.

Sept. 18.—The tendency towards improvement in the Coal Trade of this district seems to have fallen off with the warmer weather, and the business now coming forward is only very moderate; house-fire coals are, however, still moving off better than they were last month, and pits are kept going about four days a week, with collieries here and there running full time; but in many cases stocks are still being put down. For house-fire coals pit prices are fairly steady at about 9s. for best Wigan Arley, 7s. for seconds and Pemberton Four-foot, and about 6s. for common sorts; but 6d. under these figures is still being taken in some cases. Common round coals continue only in dull demand for home trade requirements, and were it not that a considerable quantity of steam coal is still going away for shipment colliery proprietors in many places would have a large proportion of their output thrown upon their hands. At the pit mouth common round coal for steam and forge purposes averages about 5s. 6d. per ton, and for delivery at the High Level, Liverpool, or the Garston Docks 7s. 5d., is about the average price that is being got for good ordinary qualities. Engine classes of fuel are in fair demand, but supplies continue plentiful with the common sorts of slack becoming rather a drag in the market. Burgate at the pit mouth averages about 4s. 6d., to 5s., good slack 4s., and common sorts 3s. to 3s. 6d. per ton.

In the Iron Trade the weight of business doing continues very small; and so far as prices are concerned, a steady tone is being maintained, and, if anything, a rather better feeling seems to prevail. There is more disposition on the part of buyers to give out orders at the very lowest prices that makers have recently taken to effect temporary sales to keep works going; and if these prices could be made the basis for further transactions there is little doubt a considerable business might be done for forward delivery; but makers do not see any advantage in committing themselves very far ahead at prices that are unremunerative. Where makers have orders to keep them going they are holding out for a slight advance upon the minimum rates, and some brands, such as Derbyshire, could not now be got within 1s. 6d. per ton of the lowest prices that were being taken a few weeks back; but any advance in price is little more than nominal, as it is not followed by buyers; and where business of any weight is offered it is only at the very lowest rates. Lancashire pig-iron is still quoted at 41s. to 42s.; Lincolnshire, 41s. 6d. to 42s. 6d., with Derbyshire brands about 43s. to 44s., less 2½ per cent. delivered equal to Manchester.

Hematites still meet with only a very limited enquiry, and good foundry brands could be bought readily at about 53s. 6d. to 54s. less 2½ delivered into this district.

Manufactured iron makers are kept fairly well employed, but prices are only maintained with difficulty, and in some cases merchants are underselling. Bars are quoted at 57. 12s. 6d. for good local and North Staffordshire qualities delivered here, local made hoops at 67. to 67. 2s. 6d., and sheets at about 71. per ton for singles, and 87. for doubles.

The condition of the engineering trades remains much the same as last reported. The returns of the Amalgamated Society of Engineers shows that the state of employment is practically unchanged, but the general tone of the branch reports is that trade is quiet, with a tendency to decline.

#### TRADE OF THE TYNE AND WEAR.

Sept. 18.—The demand for steam coal on the Tyne continues to improve; there is some dispute as to rates, but outside of contracts 10s. per ton can now be got, and this price is expected to rule in the future. The demand from France for this coal is expected to improve as the autumn advances, but for second-class steam coal is not quite so good; yet, on the whole, the Northumberland coal trade is encouraging. In Durham the gas coal trade continues to improve, the Wallsend house coal is also in more demand. The London market has been better of late, and as stocks of this coal must soon be got for the winter season it is hoped that the position of this branch of the coal trade will be improved. The shipments of coke continue on the whole good; but the demand for inland consumption is still flat, owing to the continued depression in the iron trade. The Marley Hill Company, Messrs. Strakers and Love, &c., have a good business, most of them holding good contracts, but second-class works here have some difficulty in disposing of their produce.

The depression in the Iron Trade is seriously affecting the coal trade in Durham. The consumption of manufacturing coals in the locality has been seriously reduced. At Sleetburn Colliery the hands have been reduced, and it has been decided to suspend operations at the Sheldon Furnace Colliery, belonging to Messrs. Bolckow and Vaughan; this is a most serious affair, as from 500 to 600 hands are employed there. At the Hebburn Colliery a dispute has occurred between the masters and the men respecting the conduct of one of the underground officers, and the men have given notice to leave their employment on Saturday. It is hoped, however, that as the dispute does not involve any question of wages, that the difficulty will be overcome. A considerable quantity of manufacturing coal is now sold in these ports as bunker coal at fair prices for the colliery owners; and as this coal is low in price compared to steam coal, considerable advantage is derived on this head by the owners of steamships.

The foreign coaling system still attracts considerable attention; there is a good field there for shippers of coal from these rivers, which will not be lost sight of. The Tyne is unequalled for large vessels loading outwards; one is now loading on the river which carries 4700 tons; and in her four voyages from here to the East Indies has taken away about 19,000 tons of best steam coal.

The shipments of coal and coke at Tyne Dock for the past week were upwards of 110,000 tons, and at other points on the Tyne and the Wear they have also been large. Mr. Robert Dickenson, a large colliery proprietor in North-West Durham, died last week, aged 74 years. The old Sheriff Hill Colliery, three miles south of Gateshead, has been re-opened by Mr. Forster, and the drawing of coal will shortly be commenced there. This is one of the oldest collieries in North Durham, a number of shafts having been sunk at an early date, some of them to a depth of 146 fathoms, and valuable seams were proved, some of which were worked to a considerable extent.

It is remarkable that the whole of the workable seams in the Durham coal field are found in perfection here, and those who are acquainted with it are aware that this seldom occurs in any particular locality. In some localities the upper seam is so defective as to be quite unworkable, and the lower seams below the Hutton seam, the Beaumont, and Brockwell seams, are so much disturbed by faults and hitches as to be unworkable at a profit. But at Sheriff Hill the whole of the seams, so far as they have been proved, are in a good state. The Beaumont or Harvey seam here below the Hutton seam is valuable. There is a small fire-clay band in it; the top coal is a very fine house coal. At the King pit the seam was worked to some extent about the year 1846 by Mr. Grace, when an explosion occurred resulting in the loss of a large number of men and boys. Shortly afterwards the works were closed, the owner becoming involved in financial difficulties. No doubt a large quan-

tity of coal remains in various seams on the estate, and a considerable quantity of whole coal is still in the famous Hutton seam. As to the Beaumont seam, it appears to be certain that it is entire over the greater part of the royalty, and in a good state, as it was worked at the King pit in the south side to some extent, and the same seam is at present worked at the Haworth Colliery, on the east side of Sheriff Hill royalty, where it is of great thickness and good quality. It was also worked extensively at the Derwent Crook Colliery, on the west side of Sheriff Hill, many years ago. There is every facility for shipping the produce of this coal field, as the pits are connected by a short railway with the Ouston Colliery Railway, and the coal can thus be sent on board at Pelaw, on the Tyne, at a slight cost for railway haulage.

No improvement has taken place in the Iron Trade during the past week. The tendency is still in the other direction. However, shipments of pig-iron have improved so far in September, and there is less chance of a material addition to stocks for the present month. The continental and general shipping demand has improved. The prospect for the winter trade is, however, very bad. The price of No. 3 iron largely exceeds forge iron, there being a difference of 3s. to 3s. 6d. per ton, which has never been known before. The quotation of the combination makers is 37s. for No. 3, but most business is done by merchants and outside makers at 36s. 4d. Warrants are offered at 36s. In manufactured iron there is little new to note. Bars are 57. 2s. 6d.; angles, 47. 15s.; ship-plates, 57. The Coal Trade is unchanged in the Middlesbrough district. A good demand for steam and gas coal is maintained, and that for house coal improving; but for manufacturing coal it continues extremely sluggish. Good progress has been made with the new steelworks of Sir William Armstrong and Co., at Elswick, and orders have been received for new ships both on the Tyne and Wear. At the great Jarrow Works of Palmer and Co. good orders have been got for ships for the British Government, which will provide employment for a few months to come. A number of additional hands have been employed. The necessary plant for the manufacture of steel-plates has been provided, and work will be commenced shortly. On Monday two hematite pits at the Eston Steelworks, Middlesbrough, were restarted, which will afford employment to 1000 men in the manufacture of steel rails. The orders on hand, however, are not large. It is expected that the tin-plate mill will be started at the end of the present week, and that the alterations which will enable them to manufacture steel-plates from either Martin-Siemens, basic, or hematite iron will be ready in six weeks from the present time.

#### REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

Sept. 18.—There is but little work doing in North Wales this week. The fine weather and the musical and other attractions of the National Eisteddfod, which is being held in Liverpool, are drawing the people to that city by thousands. There was tumultuous cheering in the pavilion there yesterday, when the prize of 200 guineas for the best chorus singing by choirs of not less than 150 voices was awarded to the choir from the Penrhyn Slate Quarries. There were from 10,000 to 15,000 people present.

In order to meet the increased shipping, which is expected at Connaught Quay on the completion of the new railway, a considerable extension of the dock accommodation has been begun, and the present railway has had its line doubled. There is greater activity, with better prices in the iron trade, and the collieries are well employed.

A very important trade in North Wales is that of limestone quarrying, the great purity of the lower beds of limestone specially fitting them for iron smelting and for chemical uses. A good trade is also done with the limestone for building purposes. This remark applies, perhaps, to most of the quarries at the western end of the belt of limestone about Anglesey, where the blocks are large, and the stone makes beautiful varieties of marble.

The Slate Trade keeps fairly good. The number of arrivals of vessels at Port Dinorwic last week was 12, and the sailings 12. At Carnarvon there were 20 arrivals and 11 sailings, and at Penrhyn 6 arrivals and 9 sailings.

Through the greater number of people who have flocked to North Wales this summer, there has been a remarkable advance in the steamboat traffic along the coast. Let me commend the people of Bangor with the growing importance of their town to consider whether they could not contrive a better and safer pier than the present gridiron arrangement. Most trades are pretty well employed.

#### TRADE IN SOUTH WALES.

Sept. 18.—The Steam Coal Trade remains in a satisfactory state, although not much pressure is apparent. The amount sent away from Cardiff last week was 151,781 tons foreign and about 20,000 coastwise, with 4550 tons patent fuel; Newport, 36,537 tons foreign and 24,054 coastwise; Swansea, 20,561 tons foreign, and about 14,000 coastwise, with 8122 tons patent fuel. The house coal trade is a little better. Small steam coal is in great demand, but the patent fuel trade is active.

At the Old Black Vein Colliery, Risca, the men decline to accept a fall of 4d. per ton, and it is probable that the pit will be closed. At the Upper Pit, where about 1000 men are employed, matters are working satisfactorily.

The strike at Gelli and Tynybedw Collieries continue, but both masters and men have carried on their dispute in a good spirit, and thus there is every hope of a satisfactory conclusion at no distant date. Those who oppose arbitration are not the real friends of the men. Mr. W. T. Lewis, or anyone else who understands the dispute, could settle the matter in an hour.

There is no doubt that as regards the volume of trade in iron and steel matters are not so bad, because the stocks are low, notwithstanding good imports of ore, but the margin of profit is too small, although wages are low. If the men worked almost for nothing, still profits would not be extraordinarily great. Last week Cardiff sent away 1204 tons, and Newport 2220 tons. The arrivals of iron ore at Cardiff last week were 6739 tons from Bilbao, and 375 from other places; Newport, 4000 tons from Bilbao, and 6075 from other places. Dowlais and Rhymney Works sent away by rail last week about 3000 tons of iron and steel. The native ironstone is being rapidly exhausted.

Tin-plates are not in such active demand as last week, but as stocks are low there is every probability of a better demand in a week or so. Good I C cokes fetch from 15s. to 16s. per box, while "wasters" are quoted at 14s. 3d. Charcoals are from 17s. to 19s.

#### REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

Sept. 18.—The market this week does not show the vitality of a week ago as regards pig-iron. The advanced prices which vendors are asking is checking the disposition to buy. The chief purchasers, too, have bought pretty much all they require for the present, yet selling is proceeding in some directions. Prices are kept up at 41s. 6d. to 42s. for Northampton, and 42s. 6d. for Derbyshire. Staffordshire all-mines are 57s. 6d. to 58s. 3d. The demand for finished iron is on the contrary still improving in the sheet branch. Additional mills are being set on in various parts of the district, and altogether the works wear a brighter appearance. Prices are well maintained at 2s. 6d. to 5s. per ton rise on the late minimum. Best makers quote 71. to 71. 5s. for singles, and 71. 10s. to 71. 12s. 6d. and 71. 15s. for doubles. Hoops and strips are seeing some good sales alike on local and export merchant account. Gas tube strip is 57. 15s.; rod iron bedstead tube strip, 71. 10s.; steel nail strip, 71. 5s.; and steel welded tube strip, 107. The demand for coal is unchanged.

The colliers' strike is nearing the close of the period for which the arbitrator's award, against which the men came out of the pits, was made. This is Sept. 27. At a mass meeting of the men, held at Dudley on Wednesday, it was resolved that the masters be requested to send a dozen of their number to discuss with an equal number of men what course shall be pursued after this date. What reply the employers will send is uncertain. Meanwhile, they remain firm in their determination to enforce the drop. Mr. R. Mason has given notice to his men at Great Bridge and Westbromwich, to the number

of between 200 and 300, who have been hitherto allowed to work at the old rate, that they must accept the reduction or leave the pits. Similar action has been taken by the chartermasters in the pits at Netherthorpe, near Dudley, of Messrs. Cranbrook and Aston. Indeed, at these latter pits the men were required to submit to an immediate drop without notice, and, refusing to accept the position, the men are already "out." On the other hand, the number of men working at the drop at the Earl of Dudley's collieries and at those of the Hamstead Colliery Company is gradually, though slowly, increasing.

On Wednesday a number of the Mines Drainage Commissioners, presided over by Mr. Joseph W. Williams, sat in Wolverhampton to hear appeals against the tonnage assessments made by the Commissioners of the minerals raised during the half year ended June 30 last at the various collieries throughout the whole area affected by the Acts. The assessed tonnage has to bear a rate of 1d. per ton for surface drainage purposes, and in some districts a rate also of 6d. per ton for mines drainage purposes; and it is this latter circumstance which imparts to the assessment most of its importance. The proceedings were, as usual, private, but it was learnt that the appellants numbered some 55, the great majority coming from the Tipton district. This number is an increase upon that of six months ago, consequent in part, it is believed, of the Commissioners having more generally than six months ago increased the tonnage returns submitted in the first instance by the occupiers.

The explosion at the Hall End Colliery, Westbromwich, on Sept. 6 has now resulted in the deaths of six of the injured miners. The inquest has been opened at Westbromwich, but after evidence of identification had been given, it was adjourned until Oct. 1. The five surviving men are still in the hospital, and continue in a serious state.

**PROPOSED AMERICAN-ASIATIC RAILWAY.**—Major W. H. Kent's project for a railway from the United States to Asia via Behring's Straits is now receiving some attention in New York. The proposed western terminus of the Canadian Pacific was Fort Simpson, in latitude 54° 40', near the southern boundary of Alaska. By following up the trend of the coast to Mount St. Elias, 525 miles, and thence crossing the main body of the territory to Behring's Straits, 1000 miles more, the line would pass through the best part of Old Russian territory, which is said to possess forests equalled only by those of Central Africa, and stores of precious metals which will surpass those of California, besides being a magnificent fur country. Behring's Straits has an average width of 36 miles, but at its narrowest point is a cluster of small islands, and here the Straits are comparatively free from ice; the year round, and afford good anchorage for vessels. The widest space between any two points of land between the islands and the two continents is only a mile and a half, and crossing the Straits is one of the least difficult steps in the proposed line. From Cape East on the Asiatic side it is proposed that the line would keep to the coast line as far as possible to obtain the benefit of the milder temperature resulting from the Japanese current. The southern terminus would be at Vladivostok, where a junction would be made with the Russian system of railways now pushing down to Irkutsk, the capital of Siberia. Major Kent has received flattering encouragement from the Russian Minister of the Interior being urged to visit St. Petersburg in person. The necessity of commerce and trans-continental communication may not demand such a railway now, but Major Kent regards both the demand and supply as a mere question of time.

**NEW STEAM-ENGINE GOVERNOR.**—Messrs. DEAKIN, PARKER, and Co., of Salford, who are well known for their Sandon and other governors, have introduced recently a new governor termed the Acme—Lindley's patent—which is deserving of notice. The most important feature of the Acme governor is its simplicity of construction, and this is partly secured by the introduction of tension springs attached directly to the revolving weights, instead of acting on them through the intervention of levers and joints, with their inevitable friction and wear, whilst these tension springs at once ensure that sensitiveness which is essential in a good governor. The running joint by which the motion is given to the valve spindle is at the top, where it is easily oiled and can be at once exposed to view, whilst, if necessary, the spindle can be raised or lowered by unscrewing the cap at the top of the governor. The links that transmit the motion from the weights to the joints have nothing to do except move the spindle which moves with the greatest freedom, and they are thus free from all strains. The equilibrium valve is in perfect balance and offers only the slightest resistance to the motion of the governor, which by reason of the great weight of its hemispherical flywheels has a large reserve of power. A "speeder" is attached by means of which the speed of the engine can be increased or decreased 25 per cent. by simply turning a small screwhead attached to the governor. These governors will work either horizontally, vertically, or upside down, and they are specially adaptable for engines used in generating the power for electric lighting purposes, to which a number of them have already been applied with very successful results.

**WERSHOVEN'S TECHNICAL DICTIONARY.**—The useful little manuals for assisting the translation of technical treatises and scientific papers from English or French into German, or vice versa, prepared by Dr. Wershoven, have from time to time been noticed in the *Mining Journal*, and he has now completed a still more useful alphabetical dictionary, of which the first part is now issued—"Naturwissenschaftlich-technisches Wörterbuch; die Ausdrücke der Physik, Meteorologie, Mechanik, Chemie, Hüttenkunde, chemischen Technologie, Electrotechnik," von Dr. F. J. Wershoven. Berlin: Leonhard Simeon'sche Verlag—and which when completed will be, to judge from the part now before us, one of the most useful little technical dictionaries extant. The complete work is to consist of four parts—English, German, German-English, French-German, German-French—each part filling from 240 to 250 pages; yet the whole dictionary will cost but half-a-dozen shillings. The vocabulary is well selected and the translations appear to be accurate. The amount of labour involved must have been large, but it has well repaid the author in the useful result.

**ELIMINATING ARSENIC FROM ZINC.**—The Revue Industrielle reports that a new process for eliminating arsenic from zinc has been brought forward by Mr. l'Hôte. Instead of fusing with nitrate of potash and redistilling as heretofore done to obtain a pure article he injects into the molten metal from 1 to 1.5 per cent. of anhydrous chloride of magnesium. On stirring fumes of white chloride of zinc escape and carry off the arsenic. Cast into cold water the granulated zinc thus obtained is absolutely free from arsenic and is attacked by sulphuric acid diluted with ten times its volume of water.

**THE SILVER COUNTRY IN NEW SOUTH WALES.**—An official communication has been received in Sydney from Menindie, giving some remarkable information regarding the richness of one of the silver mines at Sil rton. There are three or four shafts on the lode, the deepest being 87 ft., and the lode in the mine maintained an average width of 3 ft. The ore tested and in sight is valued at 100,000l., besides which the writer of the report from which this information is taken was informed that ore to the value of 60,000l. had already been dispatched from the mine. The ore, when brought to the surface, is classed into five different grades, some of which are sent direct to Germany for treatment, while the rest is put aside in the hope that some day it may be treated on the spot. The quantity now sent away weekly is from 10 to 12 tons, which, at the lowest calculation, is valued at 3000l. per ton. The entire cost of raising, carting, and freight to Germany is about 20l. per ton, which leaves a clear profit of something like 2000l. per week. One gentleman, owning a one-fifth share in the mine, recently sold half of his interest for 16,500l. The quantity of silver and silver-lead ores in the Barrier Ranges is said to be unlimited, but as the means of transit is both expensive and limited, it is only the high class ore that can at present be tested. Several very rich surface indications have been found at Mount Gipps, one assay of silver ore showing upwards of 13,000 ozs. of silver to the ton. Another, taken from the outcrop of a lode 9 in. wide, gave 3600 ozs. per ton, and in consequence of these finds a considerable number of men are gathering there. Mount Gipps lies about 30 miles from Silverton, and 70 from Menindie.



GOLD MINING IN NORTH QUEENSLAND—THE  
RAVENSWOOD MUNDICS.

Much misapprehension exists, says a correspondent of the *Charters Towers and North Queensland Mining Journal*, as to their gold-bearing nature, and outside the field it has been accepted that all the mundic ores were equally rich, and all gold bearing. This latter quality is true in a majority of cases, but we have conclusive evidence that in a few ores it exists in quantities that are not payable. Even this statement is only relatively true if we do not discount the future; but probably other circumstances not existing at present will permit of mining the poor ores at a profit. Taking the whole of the ores on an average we find it the richest ore yielding field in the world. The late Mr. Bell, a mineralogist, metallurgist, and chemist of very high rank in the scientific world, after exhaustive analyses of 70 ores and tailings, stated that the average yield of gold was 3½ ozs. per ton of undressed ore. The sizes of the reefs or lodes—which would be the better term referring to metallic deposits fairly free from gangue—astonished him, and on good authority we have a statement from Prof. Pearce, the leading metallurgist in California, that 1½ ozs. of gold per ton of ore was a very high average in that state, and a lode 3 in. wide a very uncommon one. That width for practical discussion can be accepted as the average of this field, and taken in conjunction with our average can fairly claim supremacy as regards size, richness, and, so far, permanency. From the foregoing one would think that the realisation of their market value was plain sailing. But it is here where our difficulties come in.

The gold does not run true—that is, it leaves blanks, which the ordinary mineowner is unable to discern unless by an expensive system of assay. The term used on the field to explain this peculiarity is, running in shoots. Now, when off the shoot of gold there is no perceptible change in the ore or the country. The gold has gone whither? My belief is that it is there, but tied up as sulphides, probably the greater portion dissipated. To the miner it has gone, hence that ore is to him useless. But it is necessary to raise it he thinking it gold bearing, and for the want of a check in the way of assay it is shipped, and lessens the average of the gold-bearing ore with it. To check his work an assay of every ton is a necessity, but that increases the cost per ton by 10s., and is a charge he is not prepared for. Then there is a system very generally ignored on the field, and ultimately connected with the proper and dividend-paying management of a mine, and that is, ore classification. The ores change very much, at one time blende is the predominant feature; at another copper pyrites and magnetic iron pyrites, again it will be arsenical pyrites, cobalt, and nickel, galena and iron pyrites, antimony, galena, and copper glance, or iron pyrites in place of the glance, blende, and talc, chromic iron and copper pyrites; then, again, half-a-dozen of these minerals will compose an ore, so the difficulty of classification is increased.

In those mines that produce a descriptive ore, and one true to its character, classification is comparatively simple, and aided with shovel roasting and acid tests very fair approximations are arrived at, and ores are kept up to a general standard. But these descriptive ores do not apply generally to the mines. There are four or five on the field which possess this distinctive feature—the Grant, which produces a blende either pure or allied with copper pyrites and cobalt, which is always blended with nickel; the Black Jack which has a pure blende, or a blende allied with copper pyrites and magnetic iron pyrites, and cobalt; the Mellaneur Junction which has a blende mixed with copper pyrites, and the John Bull line which produces a galena and iron pyrites. The Mellaneur, one of our very best properties, produces the most diversified ores, but all gold bearing, and so far has careful examination and practice gone that the yield per ton is nearly approximated by the owners. Much of this is due to the long working of the mine, and the fact that such knowledge was necessary; but in mines worked by new men they have to acquire this knowledge as soon as possible so as to keep down expenses and prevent loss or closure of the mine.

Blende is accepted on the field as the richest gold-bearing ore, and allied with copper it still maintains its gold yield, and materially increases its value. Copper is bought by the smelter over 8 per cent., and several mines, one notably, yield over that. As a rule the best smelting ores are the richest in gold. I do not mean the easiest to smelt as they are generally the most difficult, but those ores are most profitable to the smelter. And it is a fact that over a certain percentage of gold per ton he will give more per ounce for gold from such ores than from inferior ores carrying the same percentage of gold. Of course this to him is a business matter, for it tends to encourage the miner to classify and ship home the ores most suitable to him. A plan, and one I think would work well and at little cost, would be to roughly classify the various ores into heaps and then take rough averages for local assay, keeping a record of the descriptions of ores and their assays. Repeat this process half-a-dozen times, and to check the results ship the different ores to the market under different marks, and ascertain their values. This at the outset costs time and trouble, but where large interests are concerned the first cost is always the best. Where shipping undressed ores is practised there must always be first and seconds. The former represents metal as nearly free from adhering gangue as can be obtained, the latter represents ore attached to the gangue. Firsts if well picked will average 60 per cent. of metal, which might be viewed as a low average, but when the most metallic ore is broken the gangue is seen intimately blended, it evidently playing a most important part in combining.

Nothing to me shows plainer the aqueous nature of the deposition than the close blending of the silica with the metal, and that their deposition was concurrent, possibly silicic acid, acting as a precipitant creating another action that caused its simultaneous deposition. Heat afterwards played the part of crystallisation of the silica and the alteration of the metallic deposits from their true character. From close inspection of average mundics I incline to the belief that 45 to 50 per cent. would represent the percentage of firsts, seconds can be placed at 25 per cent., and these would be the best of their class. Seconds of that nature with careful hand-picking, and the ore of a first-class quality, would profitably pay for shipment. Those below that and of a poor quality from a smelter's point of view require free crushing and concentrating, and they have paid very well under that treatment: 20 per cent. ores should go through the battery, for they generally carry free gold which is either freely scattered through the gangue or lies at the point of junction of the metal with the gangue.

For general purposes the best gold-bearing mundic is blende. The richest all round mundic is the copper pyrites amalgamated with nickel and cobalt. These features belong to the General Grant, the Black Jack, and partially to the Mellaneur. The Mellaneur Black Jack Junction mundic partakes of the characteristics of the two lines, but it is yet too early to form any decided opinion. The Mellaneur arsenical ores are largely mixed with cobalt and nickel, and are very valuable to the smelter as the two latter are high priced metals. But compared to the properties named its average ore yield of gold is below them. But when the blende comes in quite the opposite obtains, its gold-yielding results are equal to them, and on occasions it more than holds its own. It would be extremely difficult to give an average estimate of each mine's ore, although it can be done approximately, but as this is trenching on to ground outside this article it need not be discussed.

A form of ore not yet spoken of, the galena and iron pyrites, is a peculiarity of the Sandy Creek district, and is invariably rich in gold. There the reefs or formations are large, and the lodes run through them either as a single vein or a number. The formation averages ½ oz. free gold supplemented by 4 dwts., by buddling and pan dressing perhaps a little more; however, 17 dwts. will give a good average, and the buddlings assay from 3 to 4 ozs. of gold. The metal itself rarely falls below 6 ozs. per ton, but a very large amount of gold is lost in a sulphide state and by water wastage for which there seems to be no check, and for that matter that drawback applies to every machine. Sludges are found that will give an assay as high as 25 dwts., and few go below that unless surface stone has been crushed, and then 10 dwts. can be found in its sludge. Assay and recovery are so wide apart that I merely record the above as facts.

## THE COAL AND METAL TRADES IN CHINA—No. II.

The net value of the trade of the port of Tien-tsin for the year 1883—that is, the portion of which the Foreign Customs Inspectorate has cognisance—amounted to 21,667,011 Haikwan taels, or, at 5s. 6d. per tael, 5,958,428*l*. The amount of treasure imported into Tien-tsin during 1883 was—Gold equivalent in value to 5286 H. taels; silver, 4,292,700 H. taels=4,297,986 H. taels; copper cash, 116,599 strings=13,433 taels. Exported—Gold equivalent in value to 610,002 H. taels; silver, 4,172,414 H. taels=4,782,436 H. taels. It will be observed that the quantity of silver exported is nearly balanced by that imported. The explanation I believe to be that there is no assay office at this port; consequently, the native silver is sent to the assay office at Shanghai, where it is melted, the gold extracted from it, and 1 per cent. of alloy added, when it is cast into the shape of shoes, and sent back to Tien-tsin, bearing the stamp of the assay office. There is a great dearth of copper cash in this district, and its exportation is prohibited by the Chinese authorities. This year the importation of cash will probably be on a much larger scale. In addition to the amounts included in the above return, upwards of 100,000 Mexican dollars are annually imported by the legations and foreigners residing at Peking and Tien-tsin, of which, practically, none are exported. So soon as an unfavourable exchange occurs at Peking between dollars and cash, it is the practice of the natives to melt down all the dollars they may have on hand.

The great excess in value of the imports over the exports has always been the normal condition of affairs at Tien-tsin. It can only be accounted for on the supposition that the excess is met by tribute in kind, and money finding its way into the provinces overland. The 4,000,000 taels exported are also supposed to change hands at Shanghai, going down as the property of traders in payment of imports, and coming back again as Government money in payment of taxes due to the Peking Government. By a proper system of Chinese banking at this port, all this unnecessary expense incurred in sending treasure to and from Shanghai would be avoided. As regards imports from foreign countries, the year 1883 was a disappointment. It had been expected that the depression of the two previous years would have given a big impetus to the trade of 1883, but on account of floods, financial difficulties, and unsatisfactory harvests, merchants from the interior were obliged to limit their purchases to supplying only the most pressing wants. As the quantity of cottons and woollens imported was in excess, large stocks remained over at the close of navigation; but, when the ice provided highways, it was confidently expected that the bulk of the goods would be disposed of. But again it was to be disappointment, as the winter kept so remarkably mild that no ice was formed strong enough to bear traffic, whilst there was sufficient of it to stop all navigation on the canals and rivers by cargo boats. There was, however, one feature of the year worthy, perhaps, of being marked—the increased amount of business which resident foreign firms were able to do direct with Europe. The quantity thus imported is certainly only a small proportion of the whole, but still it is gratifying that the thin end of the wedge has been inserted, and every year is sure to see an increase in this respect. The landing, shipping, commission, and insurance charges on those goods landed and sold in Shanghai for the north amount to a considerable sum, and now that the Hong Kong and Shanghai Banking Corporation has a flourishing branch in the port, the Tien-tsin firms are enabled to enjoy equal financial advantages with those in Shanghai, can import direct, save the Shanghai charges, and, consequently, land the goods in Tien-tsin at a lower figure.

Exporters in England cannot fail to note these circumstances by-and-by, and largely increase their direct shipments to the port, with advantage to themselves and trade in general, as cheap goods generally mean increased power of consumption. The above remarks in reference to the business done by Tien-tsin foreign firms apply with double force to exports, wherein the amount of business done direct with Europe and America showed a marvellous increase on that of any preceding year. When it is considered that the resident firms have the advantage over those in Shanghai of first selection, and that the amount saved in commission and other expenses must be at least 5 per cent., the probability is that within a few years Shanghai will cease to be a mart for northern produce. The total value of the chief exports to foreign countries amounts, at a moderate computation to 500,000*l*. Of these the most important is straw braid. The amount exported during the year was 26,600 piculs, showing a marked increase over any preceding year. It is interesting to observe the extraordinary development that has taken place in this industry. It was first registered in the Customs Trade Returns for 1869, when the total quantity was only 85 piculs. In 10 years—i.e., in 1879, it had jumped to 10,973 piculs; in 1880, to 19,961 piculs; and now, in 1883, to 26,600 piculs.

The last information upon the Chinese colliery at Kaiping was embodied in Mr. Brennan's Trade Report for 1882. The advance made in the company's works during 1883, although very important, was not so marked as that in previous years, owing to the fact that most of the surface construction was completed in 1882. In No. 1 shaft, and below ground generally, great extension of workings has been made, and but for the recent explosion in seam No. 5 the output at date could easily have been over 6000 tons per day. The stocks at present ready for shipment amount to 25,000 tons of coal, and about 2000 tons of coke. The percentage of lump is very small, but this is a difficulty only in connection with the best coals for steamer and house use. In almost all cases coal for native consumption will actually sell better when small than if it had a large proportion of lump, a curious state of things which I fancy is peculiar to China.

The local sales during the winter vary from 100 to 350 tons per day, according to the condition of the roads and the cost of cart hire. Some of the purchasers come from a distance of 50 or 60 miles. The inferior coals sell well for 1-80 taels per ton at the pit head. The best quality of coke brings as much as 6-50 taels per ton, but is only bought in small quantities by the more wealthy families. Owing to the extreme laxity with which the company has treated the natives in many cases where fair but strong handling was necessary the people, in spite of proclamations, &c., began to mine coal in ground actually worked by the company, and naturally drained by its machinery. This led on two occasions to riots and serious trouble, which were only stopped by bringing troops from Lutai. The company was promised a monopoly of mining within 10 li of its colliery, but this arrangement does not seem to coincide with native notions upon the subject, nor with their old mining laws, and, I may add, is not furthered by the local mandarin squabbles.

The fatal accidents in the pit have been comparatively few—three men killed by falls of coal and stone, chiefly caused by attempts to rob pillars, and by their own rascality. Four men were killed by an explosion in seam No. 5 last February, at which time 18 others were injured. The coal-washing, brick-making, and tile plants, patent fuel machinery, and quarries are quite idle, entirely owing to want of energy in opening up a market.

The railway works well, with a marked increase of passenger traffic during the summer months. Aside from this, the communication with Tien-tsin and other points was an entire failure, and one would fancy that the experience of last year would drive the most apathetic of the Chinese to advocate railways. The canals and rivers were, even with careful handling, practically unnavigable for barges and coal boats, while in native hands the failure was even more complete. This was partly because the men were paid by the day, and not per ton of coal carried to the market. Tugboats, five in number, are being sent from Shanghai to assist the transport; but as they cannot work a through traffic I do not believe that the difficulty can thus be obviated; the delays consequent upon changing tugs four times will prove very serious. Four other tugs have already been worked by the company; but, for the above reason, have not proved very effective. The 70 foreign model barges are detested by the boatmen, as they carry 25 tons, with a crew of three men, against a crew of eight or ten required by a native boat of the same capacity. Wilful attempts to sink or damage them are very common. Chiefly owing to this difficulty the company is building the remainder of its boats in native fashion, instead of severely punishing the offenders, a policy common to many other matters, and almost ruinous to advancement.

The output per year is very small, owing to the serious difficulty of getting miners during the early summer. To meet this difficulty their "headmen" robbed them so unmercifully that the trouble was got over by discharging them all, instead of simply punishing those in fault. The outcry for a larger output is simply absurd, and arises from all sorts of false statements made to the Viceroy and the Haikwan Taotal. The fact is that the stocks of 1882 have not yet been sent off, owing to want of boats and to a defective transport service. On the west side of the pit there is wonderful improvement in No. 8 seam after passing a "fault," the coal being superior to that both in purity and hardness. The workshops have been kept fully employed on repairs of machinery, and in the manufacture of Cornish boilers, one tug-boat, one winding-engine, two hauling-engines, one steam-crab, fifteen 10-ton R.R. wagons, and various other manufactures less important. Gas from the works has been put along the street outside, and carried into the neighbouring village, where it was eagerly welcomed by all classes of Chinese.

The mining school started in connection with the works has not been carried on with any energy, though it still has existence. Want of enterprise in this direction is mainly due to two causes—first, the financial aid and encouragement which was promised by the Government has not been forthcoming; and, second, it seems to be the desire to restrict the advantages of the school to the students who have been in America, and to exclude all others, while at the same time these students are expected to do a fair day's work on the colliery in different departments to which they are assigned. As a consequence neither work nor study is thoroughly and systematically followed; the company loses by inefficient service, and the gain to the students themselves is at best a doubtful one. If instead of following such a policy the best and brightest native lads were taken into the school while very young—say at 12 or 13 years—and allowed to give their whole time to their studies, the results would be far more satisfactory both to the company and to the students themselves.

All that is wanted to make the company a perfect success is improved communication with Tien-tsin, even if only by extending the railway to Pehtang, and effective commercial management of the company's affairs in every detail under foreign control. Let the authorities sanction a proper means of communication, and, unless unforeseen difficulties occur in the mine through gas or water, over 600 tons of coal per diem can be sent to the Tien-tsin and Taku markets. In my opinion the demand would be three times the amount if the coal could be delivered cheaply to buyers, and increased demand would warrant the sinking of other pits to insure a constant output. This opinion is based on the anxiety shown to buy coals, and the enormous prices paid for mere rubbish, hardly saleable in Europe, and for the carts and boats needed to transport the same.

It must be distinctly understood that no foreigner has ever had the faintest control over the financial affairs of the company, and that, in my opinion, native systems of book-keeping are entirely useless for large works, even if those connected with them were fully to be trusted. The output and sales in 1883 were shipped from basin:—Lump coal, 17,122 tons; smalls, 27,352 tons=44,474 tons. Best coke, 827 tons; common, 358 tons=1185 tons.—Land Side Lump coal, 411 tons; smalls, 22,146 tons=22,557 tons. Best coke, 77 tons; common, 403 tons=480 tons. Total output for 1883, 80,000 tons; coal stock, March 19, 25,000 tons; coke stock, March 19, 2000 tons.

**MINING IN CANADA.**—The Canadian Mining Review remarks:—"Much has been accomplished during the past two years towards developing the mining industries of Canada. Rich deposits of gold, silver, copper, iron, coal, mica, phosphate, and asbestos have been discovered, and mines of these minerals are now being vigorously and profitably worked. In Nova Scotia gold mining is now on a paying basis, and the mines of British Columbia will it is expected return a larger profit this year than they have done for some years past. In Beauce and at the Lake of the Woods gold mines have been opened which from the richness of the quartz show handsome profits, but unfortunately lack of capital has retarded operations at some of the most valuable locations in these districts. The Silver Islet Company will in all probability soon resume active operations, owing to important discoveries of silver on their property on the north shore of Lake Superior. The developments at the Rabbit Mountain and Huronian Mines have proved that region to be rich in silver, and in fact it would be difficult to name any silver mine in America that produces ore carrying a larger percentage of precious metal than either of these mines. At Villeneuve Township, County of Ottawa, a mine of mica has been opened, which bids fair to become an abundant producer of mica, equal in quality to the product of the New Hampshire and North Carolina Mines, while the mining of this mineral has become a steady industry in Eastern Ontario. Asbestos of superior quality is being profitably mined in the eastern townships. The iron mines of Central Ontario have been vigorously worked during the past year, heavy shipments of ore being forwarded over the Central Ontario Railway to Weller's Bay, on Lake Ontario, and thence to Cleveland. Phosphate mining in Ottawa County has become an important industry though as yet in its infancy; the annual output is, however, increasing, and with the introduction of steam-drills and other machinery will continue to do so, the mines being capable of a much larger yield than at present. On the whole, mining in Canada is making steady progress, and looking very promising."

**UNDERGROUND WATER SUPPLY OF NEW SOUTH WALES.**—The great objection to settlement in the interior districts has been the want of permanent surface water—a circumstance which led some of the earlier explorers, arriving during the driest months of the year, to describe them as hopelessly sterile regions, although portions are now acknowledged to form some of the finest pastoral country in the world. Still, at first sight, the want of a permanent supply of surface water seems a fatal objection, and the rich fattening grass, the warm dry atmosphere, the freedom from disease, and the total absence of animal pests, appear of small moment beside the great question of water in a dry season. In all ordinary seasons there is plenty; but as no chain is stronger than its weakest part the squatter feels that, however abundant may be his store of grass, which a kindly sun without sickle or scythe has converted into hay, and which a perennially calm, or almost calm, atmosphere does not disturb, he dare not look a dry season in the face while he has full stock on the back blocks. Dams and other artificial surface supplies are well prepared and filled in a wet season; but, if not, his only other chance of getting water is by sinking, and here fortunately experience is accumulating facts which seem to place it beyond all doubt that over a very large portion, if not the whole, of that flat country, abundance of good fresh water is to be found by sinking. In some cases, when found, the water overflows in an abundant stream, and in others it has to be raised; but, so far as it has been tried, the supply is sufficient for all requirements over the greater part of the plains; and with abundance of cattle for labour very simple machinery will suffice to raise the water where necessary. At present the available information about wells is not very extensive; but every fact brought to light points in this one direction—that there is an unfailing supply below the surface. With such facts before them the holders of back blocks need fear no dry season, for with abundance of water to be got by sinking the driest season loses its worst terror. Indeed dry seasons, like many other features of Australian history, have been grossly exaggerated.

**THE AUSTRALIAN WEATHER.**—Speaking generally, the rain in New South Wales is heavy compared with that of England; that is, when falling, much less falls per hour in the English metropolis than in that of New South Wales; Sydney in 152 days has 50·08 in. rain, while London, with 146 days, has only 24·76 in. rain. So also with regard to dry intervals, 40 years' experience in Sydney has seldom furnished one month entirely without rain, but in dry periods several months sometimes pass consecutively during which the fall is too small for water supply; and of England a somewhat similar remark has been made—no complete month has ever been without rain, but at times several months are consecutive during which no rain falls available for water supply.



# TANGYES LIMITED, CORNWALL WORKS, BIRMINGHAM.

LONDON: 35, Queen Victoria Street.

NEWCASTLE: St. Nicholas Buildings.

MANCHESTER: Deansgate.

GLASGOW: Argyle and Hope Streets.

(No. 13.)

**TANGYES' LATTICE GIRDER OVERHEAD TRAVELLER**  
For use with Cherry's Patent Crab.



This Traveller comprises:—  
Wrought-iron Lattice Girder.  
A two-wheeled Carriage at each end.  
Longitudinal Travelling Gear.


Span in feet.	35	40	45	50	55	60
Tested to	1 ton	1 1/2 "	2 "	2 1/2 "	3 "	3 1/2 "
1	100	120	140	160	180	200
2	200	240	280	320	360	400
3	300	360	420	480	540	600
4	400	480	560	640	720	800
5	500	600	700	800	900	1000
6	600	720	840	960	1080	1200
7	700	840	960	1080	1200	1320
8	800	960	1080	1200	1320	1440
9	900	1080	1200	1320	1440	1560
10	1000	1200	1320	1440	1560	1680
11	1100	1320	1440	1560	1680	1800
12	1200	1440	1560	1680	1800	1920

Quotations on receipt of necessary particulars.

For particulars of Cherry's Patent Crab, which is recommended for use with this Traveller, see below.

105

**TANGYES' BOX GIRDER OVERHEAD TRAVELLER**  
WITH RUNNER.  
For use with Pulley Blocks.



This Traveller comprises:—  
A Wrought-iron Box Girder.  
A two-wheeled Carriage at each end.  
Longitudinal Travelling Gear.

Span in feet.	15	20	25	30	35	40
Tested to	1 ton	1 1/2 "	2 "	2 1/2 "	3 "	3 1/2 "
1	100	120	140	160	180	200
2	200	240	280	320	360	400
3	300	360	420	480	540	600
4	400	480	560	640	720	800
5	500	600	700	800	900	1000
6	600	720	840	960	1080	1200
7	700	840	960	1080	1200	1320
8	800	960	1080	1200	1320	1440
9	900	1080	1200	1320	1440	1560
10	1000	1200	1320	1440	1560	1680
11	1100	1320	1440	1560	1680	1800
12	1200	1440	1560	1680	1800	1920

Quotations on receipt of necessary particulars.

106

**TANGYES' DOUBLE PLATE GIRDER TRAVELLER**  
For use with Cherry's Patent Crab.



This traveller comprises:—  
Two Wrought-iron Girders.  
A two-wheeled Carriage at each end.  
Longitudinal Travelling Gear.  
A "Cherry's" Patent Brake Crab.

Span in feet.	10	15	20	25	30
Tested to	1 ton	1 1/2 "	2 "	2 1/2 "	3 "
1	100	120	140	160	180
2	200	240	280	320	360
3	300	360	420	480	540
4	400	480	560	640	720
5	500	600	700	800	900
6	600	720	840	960	1080
7	700	840	960	1080	1200
8	800	960	1080	1200	1320
9	900	1080	1200	1320	1440
10	1000	1200	1320	1440	1560
11	1100	1320	1440	1560	1680
12	1200	1440	1560	1680	1800

For intermediate spans take the mean between size above and below.  
In ordering state height of lift for Chais.

107

**TANGYES' SINGLE GIRDER OVERHEAD TRAVELLER**  
WITH RUNNER.  
For use with Pulley Blocks.



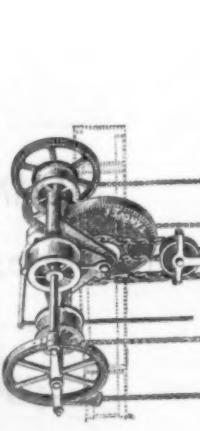
This Traveller comprises:—  
A Single Wrought-iron Girder.  
A two-wheeled Carriage at each end.  
Runner to support Blocks.

Span in feet.	12	14	16	18	20
Tested to	1 ton	1 1/2 "	2 "	2 1/2 "	3 "
1	100	120	140	160	180
2	200	240	280	320	360
3	300	360	420	480	540
4	400	480	560	640	720
5	500	600	700	800	900
6	600	720	840	960	1080
7	700	840	960	1080	1200
8	800	960	1080	1200	1320
9	900	1080	1200	1320	1440
10	1000	1200	1320	1440	1560
11	1100	1320	1440	1560	1680
12	1200	1440	1560	1680	1800

The Block shown in illustration is not included in price.

108

**CHERRY'S PATENT BRAKE CRAB.**  
TANGYES LIMITED, SOLE MAKERS.



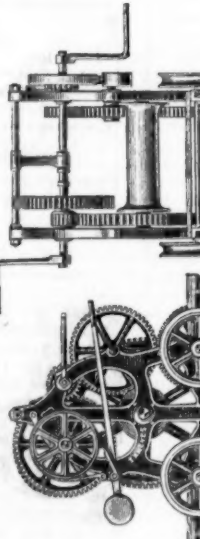
The Brake on this Crab automatically sustains the load when the motive power is entirely removed, without increasing the pressure on the lifting gear. The pressure on the load itself is obtained from, and in exact proportion to, the load itself. In lowering, the pressure so produced is relieved by a lever to the extent necessary to allow the weight to descend at any desired speed. This device, however, does not prevent the load being gently lowered by pulling the hand chain in the direction reverse to that of lifting.

Tested to	Price Crab.	Price Lifting Chain.	Price Hand Chain.	Price Traverse Chain.	Size Lifting Chain.
1 ton	£7	8d. per ft.	7d. per ft.	7d. per ft.	3/8 in.
2 "	15	10d. "	7 "	7 "	1/2 "
3 "	23	11d. "	8 "	8 "	5/8 "
4 "	31	12d. "	9 "	9 "	3/4 "
5 "	39	13d. "	10 "	10 "	7/8 "
6 "	47	14d. "	11 "	11 "	1 in.
7 "	55	15d. "	12 "	12 "	1 1/8 in.
8 "	63	16d. "	13 "	13 "	1 1/4 in.
9 "	71	17d. "	14 "	14 "	1 3/8 in.
10 "	79	18d. "	15 "	15 "	1 1/2 in.
11 "	87	19d. "	16 "	16 "	1 5/8 in.
12 "	95	20d. "	17 "	17 "	2 in.

No Traverse Chain is required with 1 and 2 ton sizes.  
Length of Hand and Traverse Chains is twice the height of lift.  
" " of Lift Chain is twice the height of lift plus 4 ft.

110

**TANGYES' OVERHEAD TRAVELLER CRAB.**



CRAB WITH BRAKE AND WOOD PLATFORM.


No.	To test to, with Single Shave Block.	Weight.	Price.	Bras Bushing.
1	4 tons	17 cwts.	£27	£1 17 6
2	6 "	20 "	31	2 7 6
3	12 "	23 "	35	3 0 0

LONGITUDINAL TRAVELLING GEAR & TWO GANTRY CARRIAGES.  
For use with above.

No.	Price.	Weight.
1	£13 10	11 cwts.
2	16 10	16 "
3	19 10	18 "

111

**TANGYES' HAND WAREHOUSE HOIST.**



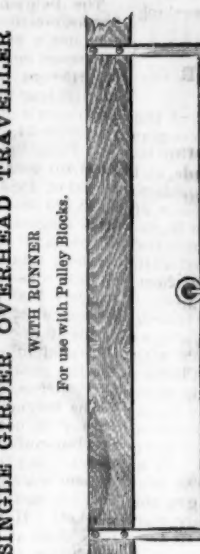
In this Hoist the lifting rope runs on a grooved pulley of large diameter—the balance weight hanging on one end of this rope and the cage on the other. Kept on same shaft as the grooved pulley are the brake and spur wheels—the spur wheel being driven by a pinion keyed on the shaft of the hand rope wheel.

Tested to	Price.	Lift rope per foot.	Hand rope per foot.
5 cwts.	£12	4d.	4d.
10 "	15	6d.	4d.
15 "	25	9d.	4d.

The 5 and 10 cwt. sizes are single gear.  
The 15 cwt. size is double gear.  
Cage, Balance Weight, and Guides, not included in above prices.  
Quotations on receipt of necessary particulars.

104

**TANGYES' SINGLE GIRDER OVERHEAD TRAVELLER**  
WITH RUNNER.  
For use with Pulley Blocks.



This Traveller comprises:—  
Wrought-iron Girder.  
A two-wheeled Carriage at each end.  
Runner for Pulley Block.

Tested to	Price for 10 feet span.	Add for each foot extra span.	Add for each foot Longitudinal Traverse.
10 cwts.	£10	10/-	5/-
12 "	12	12/-	6/-

This Traveller is not made of longer span than 18 feet.  
Pulley Block is not included in price.

109

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## MINING MACHINERY, MILLING MACHINERY

Of the MOST APPROVED AMERICAN PATTERNS.

### GOLD MILLS.

The California pattern of Gold Stamp Mill is universally accepted as the most perfect, economic, and efficient made.

We have over 900 stamps in successful work in the various Western Gold Districts.

### SILVER MILLS.

Silver amalgamation in Pans is essentially an American system evolved after years of work on the rich silver mines of Nevada.

We have over 500 Stamps, with necessary pans, settlers, roasting furnaces, &c., all of our own manufacture, at work in different silver camps of the United States, Mexico, and South America, and Phillipine Islands, Asia.

### CONCENTRATION MILLS

Of the most approved German pattern and arrangement, or with Stamps and Frue Vanner Concentrators for low grade silver ores, light in lead. We have over 20 large German pattern mills at work on lead, zinc, or copper ores, and numerous Vanner mills on ores never before successfully concentrated.

Mining Pumps, Cornish pattern, of the largest sizes. Hoisting Engines, from 4 h.p. up to the largest direct-acting engines to sink 3000 feet.

### SMELTING WORKS.

We have 80 Water Jacket Smelting Furnaces in use from 20 in. circular up to 54 in. by 60 in. for lead and silver smelting; and special High Jacket Furnaces for copper ores.

Engines of any size, plain slide valve, Corliss, compound Corliss, Boilers, all sizes. Leaching Mills, Hallidie Wire Rope Tramways, Comet Crusher, with capacity of 12 to 20 tons per hour. White, Howell, Bruckner, and Stetefeldt Roasting Furnaces, &c.

We have had twenty years experience in the manufacture solely of MINING MACHINERY, and have special facilities for shipping to all foreign parts through our New York Office, where all details of clearance, shipment, and insurance are conducted. Our machinery is already well known in Mexico, Peru, Chili, Venezuela, Honduras, and other South American countries.

Correspondence solicited. Descriptive Circulars and Catalogues on application.

### FRASER AND CHALMERS.

PRINCIPAL OFFICE AND WORKS.

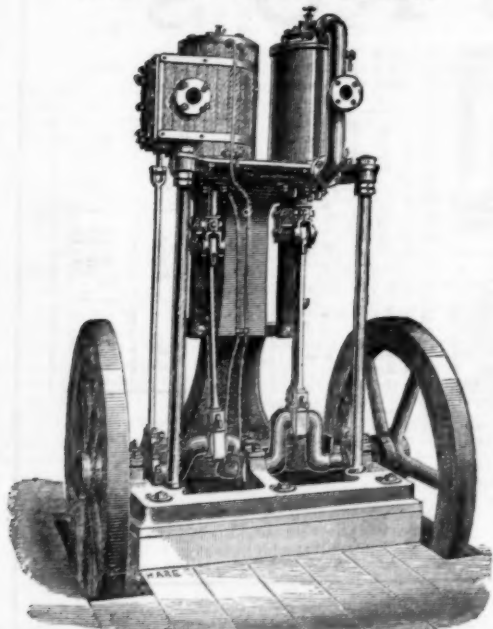
NEW YORK OFFICE.

Fulton and Union Streets,  
Chicago, Ill, U.S.

No. 2, Wall Street,  
New York, U.S.

COLORADO OFFICE—CHEESMAN BLOCK, DENVER.

## THE "Champion" Rock-borer AND AIR COMPRESSOR.



As an instance of the actual work done by this Machinery in various kinds of ground, some of it the hardest rock, it may be mentioned that in Cornwall, irrespective of the work performed by the "Champion" Rock-borers and Air-compressors purchased by various Mines, the drivage, rising, sinking, and stoping done by contract by the Proprietor with his own Machinery now amounts to over 1350 fathoms.

Several of these Air-compressors, ranging from 3½ to 12 tons in weight may be seen in constant work in the Camborne Mining District.

### R. H. HARRIS,

ENGINEER,

63, QUEEN VICTORIA STREET, LONDON.

## KIRKSTALL, BOWLING, AND STAFFORDSHIRE BAR IRON RAILS—RAILS—RAILS—

New, slightly defective.

F.B. SECTION—BULL HEAD—DOUBLE HEAD—

10, 12, 14, 16, 18, 20, 24, 30, 40, 50, 60, 70, 75, 80 lb. per yard.

Sections on application to

WILLIAM FIRTH, WATER LANE, LEEDS.

POINT and CROSSINGS with all Fittings complete.  
2500 tons in stock ready for delivery.

## CLAYTON AND SHUTTLEWORTH, STAMP END WORKS, LINCOLN, AND 78, LOMBARD STREET, LONDON.

The Royal Agricultural Society of England have awarded Every First Prize to CLAYTON and SHUTTLEWORTH for Portable and other Steam Engines since 1863, and Prizes at every Meeting at which they have competed since 1849.



GOLD MEDAL AND FIRST CLASS CERTIFICATE at the  
Calcutta International Exhibition 1883-4.

THE ONLY GOLD MEDAL

AWARDED FOR

PORTABLE STEAM ENGINES.

### Steam Engines, portable & fixed,

For Coals, Wood, Straw, and every kind of Fuel.

OVER 21,500 SOLD.

### Thrashing Machines.

OVER 19,500 SOLD.

### Straw, Corn, and Hay Elevators

### Chaff Cutters for Steam Power.

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### Saw Benches.

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GOLD MEDALS AND OTHER PRIZES have been awarded to CLAYTON AND SHUTTLEWORTH at all the important International and Colonial Exhibitions, including  
LONDON, 1851 and 1862;  
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Catalogues in English and all European Languages free on application.

## THOMAS TURTON AND SONS,

MANUFACTURERS OF

Cast Steel for Mining and other Tools, Shear, Blister, and Spring Steel.  
FILES OF SUPERIOR QUALITY.

EDGE TOOLS, HAMMERS, PICKS, AND ALL KINDS OF TOOLS FOR RAILWAYS, COLLIERIES, ENGINEERS, AND CONTRACTORS.  
LOCOMOTIVE ENGINE, RAILWAY CARRIAGE, AND WAGON SPRINGS AND BUFFERS.

## SHEAF WORKS, AND SPRING WORKS, SHEFFIELD.

LONDON OFFICES:—90, CANNON STREET, E.C.

## POTENTITE.

This unrivalled Explosive, as manufactured by the New and Perfected Machinery of the Company, is perfectly safe for transit, storage, and use, and is employed in every description of Mining or Quarrying Work, for Tunnelling, Pit Sinking, Engineering Work, and Submarine Operations, with the most complete success and satisfaction.

Potentite does NOT contain its own MEANS OF IGNITION, is free from Nitro-Glycerine, and its SAFETY has been specially demonstrated by public experiments.

Its strength is unequalled.

Its action is certain.

In action it gives off neither flame, smoke, nor offensive smell. By its use labour is economised, as work can be resumed immediately after the shot is fired.

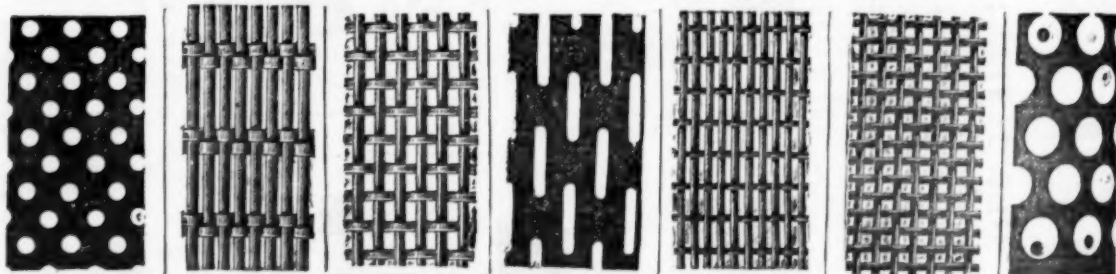
POTENTITE is specially adapted for export to hot climates, as it is unaffected by heat, and is free from dangerous exudations.

POTENTITE IS THE SAFEST STRONGEST, AND WORK FOR WORK, CHEAPEST EXPLOSIVE IN THE MARKET.

For particulars and prices, apply to—

## THE POTENTITE COMPANY, LIMITED.

HEAD OFFICE—3, FENCHURCH AVENUE, LONDON, E.C.



Extra Treble Strong Wire Cloth and  
Perforated Metals in Steel, Iron, Cop-  
per, Brass, Zinc, Bronze.

Made in all Meshes and Widths.

### N. GREENING & SONS, Limited,

Wire Manufacturers and Metal Perforators,

WARRINGTON.

Jigger Bottoms, Trommels, Cylindric  
Covers, Riddles, Sieves for Diamond,  
Gold, Silver, Copper, Lead and Tin Mines.

Samples and Prices free on application.

## FRANCIS MORTON AND CO., LIMITED, LIVERPOOL,

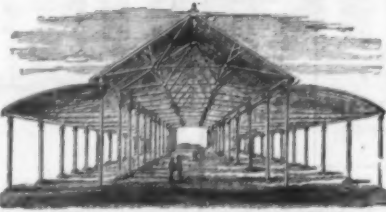
MANUFACTURERS OF

GALVANISED CORRUGATED IRON ROOFS, BUILDINGS, AND SHEDDING,

WHICH THEY HAVE EXTENSIVELY ERECTED FOR THE REQUIREMENTS OF

Forges, Rolling Mills, Puddling Sheds, Ironworks, and Collieries

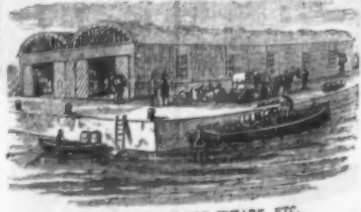
Erected Complete in this Country, or prepared to Plan for Erection Abroad.



OPEN SHED FOR COVERING LARGE AREAS

GALVANISED OR PAINTED CORRUGATED IRON ROOFING PLATES AND TILES. HEAVY CORRUGATED IRON PLATES for fireproof floors, roadways, parapets, &c. (for producing which F. M. and Co. have recently laid down powerful Hydraulic Machinery). Wrought-iron Tanks, Guttering, and General Constructional Wrought Ironwork.

DESIGNS PREPARED, AND ILLUSTRATED DESCRIPTIVE CATALOGUES FORWARDED ON APPLICATION



GENERAL STORE FOR WHARF, ETC.

London Office: 9, Victoria Chambers, Victoria Street, Westminster, S.W.

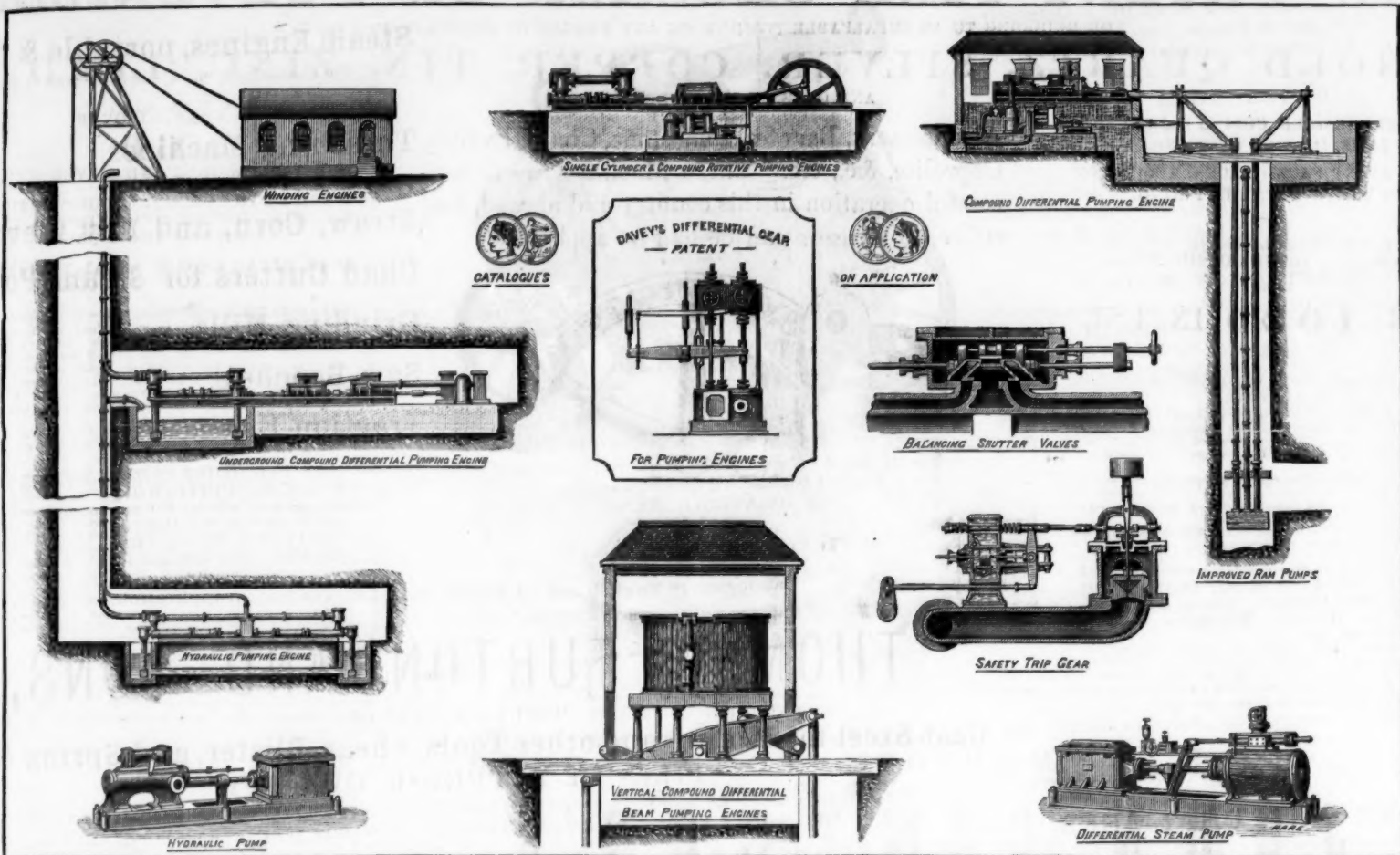
(Rooms Nos. 27 and 28, on the First Floor.)



# HATHORN, DAVEY & CO.,

PUMPING MACHINERY.

MINING MACHINERY.



## SUN FOUNDRY, LEEDS.

### BELL'S ASBESTOS.

BELL'S PATENT ASBESTOS BLOCK PACKING for High-Pressure Engines  
The following testimonials refer to this Packing:—

Mona Lodge, Amlwch, Anglesey,

2nd August, 1884.

DEAR SIR,—I have much pleasure in answering your note. Bad times in mining have compelled me to try all kinds of expedients in order to effect saving; some have succeeded and some have failed, but my underground manager, Capt. Hughes, has just said to me by the telephone—“The Asbestos Packing is the best thing ever brought here.” It saves money and trouble, but like my gas purifying oxide it lasts so long that you must not expect another order from me for twelve months at least.

Yours truly,  
T. F. EVANS,  
Late H.M. Inspector of Metalliferous Mines,  
Manchester, Sheffield, and Lincolnshire Railway—Steamship Department,  
Grimsby, April 10th, 1884.

DEAR SIR,—I have much pleasure in stating that after a trial of over nine months, and comparing it with other packings, I can confidently recommend your Asbestos Packing. It is especially valuable when high pressures are employed, as in cases where other packings have perished, owing to high temperatures, your packing has invariably stood well. I have also used it with complete success when a gland has heated with other packings, and also in cases of badly scored iron rods. I consider the results I have obtained by its use for our marine engines to have been in every way highly satisfactory.

Yours truly,  
G. H. CLARKE, Sup. Engineer.  
Department of the Director of Navy Contracts,  
Admiralty, Whitehall, 20th June, 1884.

MR.—I have to inform you that your tender has been accepted for Bell's Rolled Cloth Asbestos Packing to sample submitted:—Elastic core ... .. Square.  
Round.

To Mr. John Bell.  
The Patent Block Packing is square, as Fig. 1 and Figs. 2 and 3 represent the Round and Square Packings with solid and hollow rubber core, and Fig. 4 without core, but with rubber inlay. As these packings are extensively imitated, and as it is a common practice among dealers and agents to supply the cheaper manufactures at my list prices, I am requested to see that the packing supplied to them bears the trade mark.

BELL'S ASBESTOS BOILER PRESERVATIVE.—This useful mixture absorbing the free oxygen that is in the water entirely checks pitting and corrosion. Also disintegrates incrustation so immediately as to prevent its adhering to the boiler. Not only is a great economy of fuel effected by keeping boilers clean, but the risk of having the plates burned is thereby obviated. It has been computed that a thin coating of incrustation causes a waste of 15 per cent. of coal;  $\frac{1}{4}$  in., 50 per cent.;  $\frac{1}{2}$  in., 150 per cent. Thus the Preservative avoids the great risks which are inseparable from scaled plates, lengthens the life of a boiler, and covers its own cost a hundredfold by economy of fuel. It is entirely harmless, and has no injurious action on iron. It can be put into the feed tank or boiler, as may be most convenient. It is in drums and casks bearing the Trade Mark, without which none is genuine.

BELL'S ASBESTOS YARN and SOAPSTONE PACKING.  
Locomotives and all Stationary Engines running at very high speed with ease and friction.  
Sandwell Park Colliery, Smethwick, 1st February, 1884.

To Bell's Asbestos Works.  
DEAR SIR,—I have much pleasure in stating that I have used your Asbestos Packing for the last 13 months for our large winding engines which are running night and day, and also for the fan, pumping, and hauling engines at the above Colliery, and during that period we have not used more than one-third the Packing we had formerly; and this I attribute to your Packing on account of its great durability and excellence of quality.—I am, dear Sir, yours faithfully,  
THOMAS WINTER, Colliery Engineer.



BELL'S ASBESTOS.

The goods of this house are of the highest quality only, and no attempt is made to compete with other manufacturers by the supply of inferior materials at low prices. All “home” orders should be sent direct to the undermentioned depots and not through Agents or Factors.

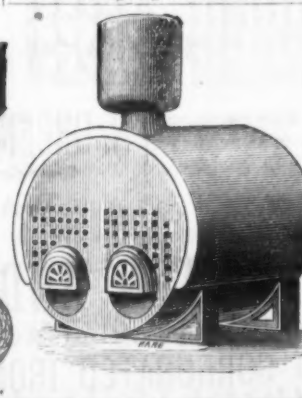


FIG. 4.

BELL'S ASBESTOS BOILER AND PIPE COVERING COMPOSITION, for coating every class of steam pipes and boilers, non-combustible and easily applied when steam is up; adheres to metals and preserves them from rust; prevents the unequal expansion and contraction of boilers exposed to weather; covers 50 per cent. more surface than any other coating, and is absolutely indestructible. It can be stripped off after many years' use, mixed up with 20 per cent. of fresh, and applied again. The composition is supplied dry, and is only to be mixed with water to the consistency required for use.

A Horizontal Boiler, 17 ft. 6 in. long, 15-H.P., gave the following results:—  
Temperature on Plates - - - 186 deg.  
Covering - - - 94 deg.

One ton of coal was saved per week, and although the fire was raked out every evening, 20 lbs. of steam were found in the boiler next morning.

The following Testimonials refer to this Covering:—  
Offices of the Wimbledon Local Board, Wimbledon, Nov. 28th, 1883.

DEAR SIR,—It may interest you to know that we save exactly 48 per cent. in fuel through using your covering.

Yours truly, W. SANTO CRIMP, C.E., F.G.S.

Mr. John Bell, Southwark, S.E.  
The Tamar and Kit Hill Granite Company (Limited),  
Gunnislake, Tavistock, 8th April, 1884.

SIR,—I have much pleasure in stating that the Asbestos covering applied by you to the boiler of our travelling crane at Kit Hill has yielded most remarkable results. Since it has been in use we have saved fully half our coal, and have effected a great saving in the time it takes to get up steam, which is often a matter of great importance to us. I should add that the crane runs on high gables, and is fully exposed to all weather. I have formed the highest opinion of your Asbestos as used for this purpose, and as you are aware, have had another boiler similarly covered, though it has not since been used. I can most strongly recommend the material.

I am, Sir, yours faithfully, W. J. CHALK, Assoc. M.Inst.C.E., Engineer and Manager.  
BELL'S ASBESTOS and INDIA-RUBBER WOVEN TAPE and SHEETING, for making every class of Steam and Water Joints. It can be bent by hand to the form required without puckering, and is especially useful in making joints of manhole and mudhole doors. It is kept in stock in rolls of 100 ft., from  $\frac{1}{4}$  in. to 3 in. wide, and any thickness from  $\frac{1}{8}$  in. upwards. Manhole covers can be lifted many times before the renewal of the jointing material is necessary. The same material is made up into sheets about 40 in. square, and each sheet bears the Trade Mark, without which none is genuine. It is very necessary to guard against imitations of this useful material, and to secure themselves against being supplied with these inferior articles at my price, users are recommended to see that every 10 ft. length of the Asbestos Tape purchased by them bears the Trade Mark.

BELL'S SPECIAL LONDON-MADE ASBESTOS MILLBOARD, for Dry Steam Joints, made of the best Asbestos fibre, is well-known for its toughness and purity, and is absolutely free from the injurious ingredients frequently used to attain an appearance of finish, regardless of the real utility of the material. Made in sheets measuring about 40 in. square, from 1-64th in. to 1 in., and  $\frac{1}{2}$  millimetre to 25 millimetres thick. Each sheet bears the Trade Mark.

The following copy of acceptance of tender refers to above:—  
Department of the Director of Navy Contracts.

Admiralty, Whitehall, S.W., 17th May, 1884.  
SIR,—I have to inform you that your tender for Asbestos Millboard has been accepted.—Mr. John Bell.

JOHN COLLETT, Director of Navy Contracts.

BELL'S ASBESTOS EXPANSION SHEETING (PATENT). This Sheeting is another combination of Asbestos with India-rubber, giving to the steam user the special advantages of both materials. The India-rubber Washer is protected from the action of heat and grease by an outer coating of vulcanised Asbestos Cloth, thus producing an excellent joint where expansion and contraction render other materials unserviceable. This material is admirably suited to steam pipe joints and every class of valve. Valves made of this material are very durable, as they are not subject to injury by oil.

FIG. 1. FIG. 2. FIG. 3.

## BELL'S "ASBESTOS LUBRICANT"

"REGD."

ILLUSTRATED PRICED CATALOGUE FREE ON APPLICATION TO

BELL'S ASBESTOS WORKS, SOUTHWARK, LONDON, S. E.

OR THE DEPOTS—118a, SOUTHWARK STREET, S.E.

Victoria Buildings, Deansgate, MANCHESTER.

11 and 13, St. Vincent Place, GLASGOW.

39, Mount Stuart Square, CARDIFF.

21, Ritter Strasse, BERLIN.



## THE BLAKE-MARSDEN NEW PATENT IMPROVED STONE BREAKERS AND ORE CRUSHERS.

ORIGINAL PATENTEE  
AND ONLY MAKER.ALSO PATENTEE AND ONLY  
MAKER OF THE**H. R. MARSDEN,**  
**NEW PATENT FINE CRUSHER OR PULVERIZER,**

FOR REDUCING TO AN IMPALPABLE POWDER, OR ANY DEGREE OF FINENESS REQUIRED.

**GOLD QUARTZ, SILVER, COPPER, TIN, ZINC, LEAD**

AND ORES OF EVERY DESCRIPTION

PATENT REVERSIBLE CUBING and CRUSHING  
JAWS, IN FOUR SECTIONS,  
WITH PATENT FACED BACKS, REQUIRING  
NO WHITE METAL IN FIXING.CRUCIBLE CAST-STEEL CONNECTING RODS.  
RENEWABLE TOGGLE CUSHIONS, &c.**OVER 4000 IN USE.**EXTRACTS FROM TESTIMONIALS.  
PULVERIZER.

"I have great pleasure in bearing testimony to the merits and capabilities of your patent combined fine crusher and sieving apparatus. I have tried it on a variety of ores and minerals, and it pulverizes them with equal success. You can put in a small paving stone and bring it out like flour."

"In reply to your favour, I have much pleasure in informing you that the 12x3 Pulverizer we had from you is giving us every satisfaction. The material we are operating on is an exceptionally hard one. I am well satisfied with its working."

"Our experience is that the motion and mechanical arrangements of your machine are the best for pulverizing that we have ever met with."

"The reports from our mines as regards the working of your Fine Crusher (20x5) recently supplied are very favourable, although we cannot quote you exact figures. On being got into position it was tried by hand, with the result that it made short work of the biggest pieces of ore we put into the hopper. You might say how long you would take to deliver another of the same size."

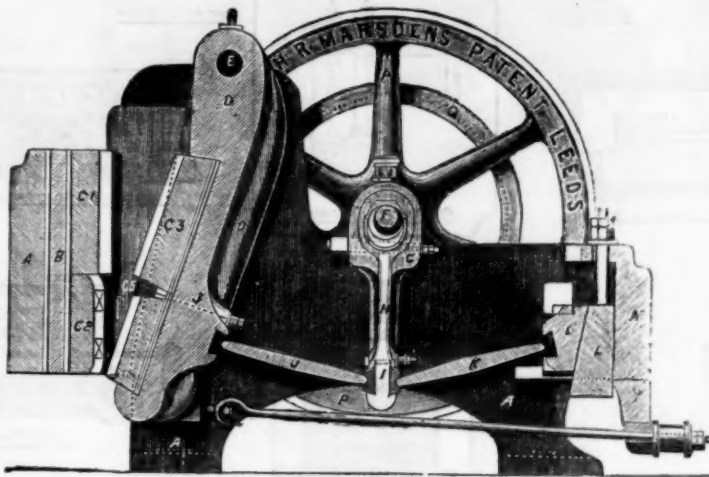
"As I once before stated, your machine is a perfect pulverizer." "I am sure the machine will be a success, and a great one, and there is any amount of demand for such a machine. We can work it with 20 lbs. of steam, and our engine, which is a 12-h.p., plays with the work, in fact we run the Stonebreaker and the Pulverizer both together with 35 lbs."

Also Cement, Barytes, Limestone, Chalk, Pyrites, Coprolite, &amp;c., &amp;c. These Machines are in successful operation in this country and abroad, and reference to users can be had on application.

AWARDED OVER

**60**FIRST-CLASS GOLD AND SILVER MEDALS.  
ADOPTED BY THE PRINCIPAL CORPORATIONS, CONTRACTORS, MINING COMPANIES, &c., IN ALL PARTS OF THE WORLD.

ROAD METAL BROKEN EQUAL TO HAND, AT ONE-TENTH THE COST.

EXTRACTS FROM TESTIMONIALS.—STONEBREAKER.  
"I now order Three of your Stone Crushers, size 15 x 10, to be of your very best construction, and to include two extra sets of Jaws and Checks for each. The last two 24x13 machines you sent me, which are at work in this colony, are doing very well. You will soon find that the railway contractors will adopt your machines in preference to the colonial ones—two of which I have. I know other contractors have had as many as nine of them, which have not given very good satisfaction. Once they know of yours thoroughly, I believe you will do a good trade with the colonies. For reference to the high character of your constructions you can refer to me and having used them with the very best results, both in New Zealand and this colony, and much prefer them to the colonial article, both in point of construction and less liability to go out of order. The material we are crushing is very hard blue stone, for railway ballast purposes. Push on with the order as quickly as possible; I do not think it necessary to have any engineering inspection. I have brought your machines prominently under the notice of all large contractors in this colony, likewise the Government. Many of the contractors have spoken to me in reference to their capabilities, and I could only tell them that they are by far and away the best and most economical I ever used. The very fact of me having purchased now Eleven from you at various intervals and various sizes, and above 12 years ago, and having tried all the other makers, is sufficient guarantee of the capabilities and the working of your machines. Yours in every way surpass all others."  
"Some of your testimonials do not give your machines half their due. I have seen men hammering away on a big rock for a quarter of a day which your machine would reduce to the required size in a quarter of a minute. I would guarantee that your largest size machine would reduce more of the Cornish tin capels (which is the hardest rock of England) in a day than 200 men, and at 1-25th the cost."

GREATLY REDUCED PRICES ON APPLICATION.

FOR CATALOGUES, TESTIMONIALS, &c., APPLY TO THE SOLE MAKER,  
**H. R. MARSDEN, SOHO FOUNDRY, LEEDS.****JOHN CAMERON'S**

FLY-WHEELS ON BOTH SIDES.

SPECIALITIES ARE HIS

**STEAM PUMPS**

FOR

**COLLIERY PURPOSES.**

Specially adapted for forcing Water any height

ALSO, FOR

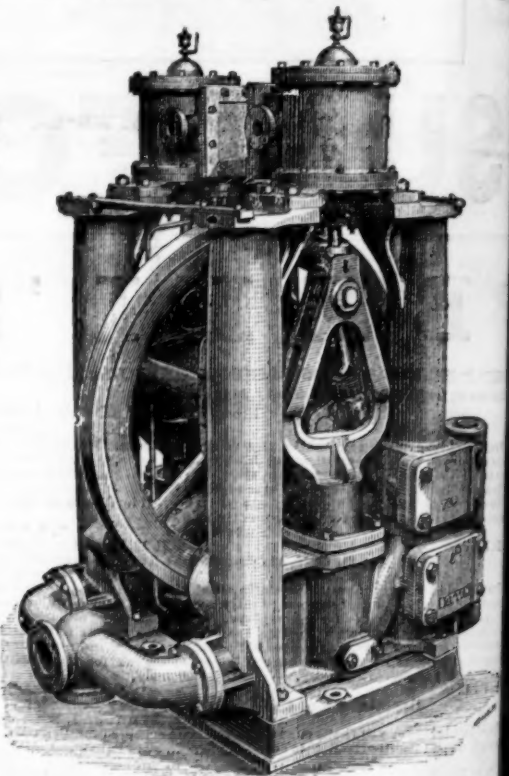
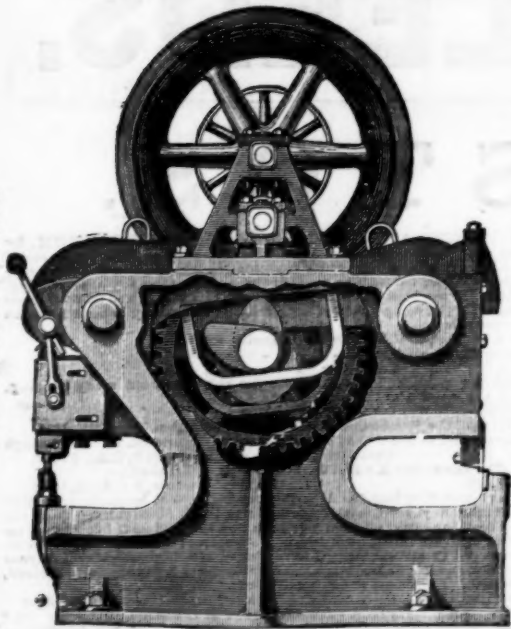
**SINKING, FEEDING BOILERS AND STEAM  
FIRE ENGINES.**

Of which he has made over 9000.

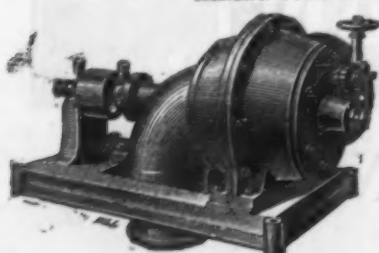
ALSO, HIS

**PATENT CAM AND LEVER  
PUNCHING & SHEARING MACHINES.**Works: Oldfield Road, Salford,  
Manchester.AGENTS: For LONDON and DISTRICT—PRICE and BELSHAM,  
52, QUEEN VICTORIA STREET, E.C.  
For NEWCASTLE and EAST COAST—E. BECKWITH AND CO.,  
BONNERSFIELD, SUNDERLAND.

DISENGAGING APPARATUS.



By a special method of preparation this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

**HEPBURN AND GALE, LIMITED,**TANNERS AND CURRIERS,  
LEATHER MILL BAND AND HOSE PIPE MANUFACTURERS,  
LONG LANE, SOUTHWARK, LONDON.  
Prize Medals, 1851, 1855, 1878, for  
MILL BANDS, HOSE, AND LEATHER FOR MACHINERY PURPOSES.**WATER POWER,**UTILISED WITH THE GREATEST ECONOMY AND  
EFFECT BY THE PATENT "TRENT" TURBINE.  
As arranged, with a horizontal spindle, it is specially adapted for  
MINING PURPOSES.

Catalogues on application to the sole British Maker,

**C. L. HETT,**  
ANCHOLME  
FOUNDRY,  
BRIGG,  
ENGLAND.

The Patent Trent, New American Hercules, &amp; Victor Turbines.

ESTABLISHED 1825.

**EDWIN LEWIS AND SONS,**

Patent Tube Works, MONMORE GREEN and Britannia Boiler Tube Works, ETTINGSHALL,

**WOLVERHAMPTON.**

MANUFACTURERS OF

Lapwelded &amp; Buttwelded Wrought-iron, Steel, or Homogeneous Tubes

FOR EVERY

**COLLIERY OR MINING PURPOSE.****J. WOOD ASTON AND CO., STOURBRIDGE**

(WORKS AND OFFICES ADJOINING CRADLEY STATION),

Manufacturers of

**CRANE, INCLINE, AND PIT CHAINS,**Also CHAIN CABLES, ANCHORS, and RIGGING CHAINS, IRON and STEEL SHOVELS, SPADERS, FORKS, ANVILS, VICES, SCYTHES, HAY and CHAFF KNIVES, PICKS, HAMMERS, NAILS, RAILWAY and MINING TOOLS, FRYING PANS, BOWLS, LADLES, &c., &c.  
Crab Winches, Pulley and Snatch Blocks, Screw and Lifting Jacks, Ship Knees, Forgings, and Use Iron of all descriptions**WELDED STEEL CHAINS** { FOR CRANES, INCLINES, MINES, &c.  
MADE ALL SIZES.